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Environmental Impact Report

THE DOWNTOWN PLAN

Volume 2: Final EIR Appendices

EE81.3

SCH 84032003

DRAFT EIR PUBLICATION DATE: March 16, 1984
PUBLIC HEARING DATES: April 26, 1984 and May 3, 1984
PUBLIC COMMENT PERIOD: March 16, 1984 through June 4, 1984
CERTIFICATION DATE: October 18, 1984
● Indicates new material provided since March 16, 1984

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APPENDIX A: INITIAL STUDY

INTRODUCTION

Differences exist between the alternatives examined in the Initial Study and the Alternatives examined in this EIR. Five of the six alternatives from the Initial Study remain essentially unchanged in the EIR, but Alternative 4 from the Initial Study is treated in the EIR as a mitigation measure applicable to all of the Alternatives and the Downtown Plan.

The Downtown Plan was formulated based on preliminary impact analyses for the EIR. Impacts of the plan are generally either within the range of impacts of the five Alternatives or they are less than those of any Alternative. The determination of the Initial Study that an EIR is required for the next generation of growth management controls in Downtown San Francisco is unchanged. Items originally focused out of the EIR by the Initial Study remain focused out, for the reasons explained in the Initial Study. Differences among data in the Initial Study and the EIR are attributable to the availability of additional and more precise data during the subsequent preparation of the EIR.

TEXT OF INITIAL STUDY

To Whom It May Concern

From Barbara Sahm, Assistant Environmental Review Officer

Attached is the Department of City Planning determination that a focused Environmental Impact Report (EIR) is required on the subject project. The discussion portion of the determination describes those areas where the proposed project may have a significant environmental impact and indicates that the EIR must cover those topics. The discussion also indicates that a few topics need not be covered in the EIR because significant impacts would not occur. If you think that coverage of an excluded topic is necessary, you may write to the Department and explain the reasons why you think a significant impact could occur (please include the file number EE81.3 in your correspondence). The attached discussion will not be revised but if Department staff or the Monitoring Panel agree that there could be a significant effect in the area of concern, the topic could be included in the EIR.

When a Draft EIR has been prepared, a copy will be mailed to you and you will have the opportunity to comment on it.

DEPARTMENT OF CITY PLANNING 100 LARKIN STREET · SAN FRANCISCO, CALIFORNIA 94102
(415) 552-1134

NOTICE THAT AN ENVIRONMENTAL IMPACT REPORT IS DETERMINED TO BE REQUIRED

Date of this Notice: February 13, 1981

Lead Agency: City and County of San Francisco, Department of City Planning
100 Larkin Street, San Francisco, CA. 94102

Agency Contact Person: Barbara Sahm Tel: (415) 552-1134

Project Title: EE81.3 Downtown San Francisco EIR

Project Sponsor: San Francisco Planning & Urban Research for Monitoring Panel comprised of John Jacobs, Joseph Martin, Esq., and Charles Starbuck.

Project Contact Person: Richard Morten

Project Address: C-3 zoned districts in San Francisco

Assessor's Block(s) and Lot(s): See City Zoning Maps Sheets 1 & 2

City and County: San Francisco

Project Description: Analysis of 6 alternatives for development control in the Downtown area.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15081 (Determining Significant Effect), 15082 (Mandatory Findings of Significance) and 15084 (Decision to Prepare an EIR), and the following reasons, as documented in the Initial Evaluation (initial study) for the project, which is on file at the Department of City Planning:

Project Description

The subject of the initial study is the group of alternative proposals for controlling development in the area of the City zoned C-3, downtown San Francisco. No one proposal has been chosen as a "proposed project"; therefore all will be analyzed at as much of an equal level as is possible, given the information available about each individual scenario. The alternatives were developed by various groups and organizations in an attempt to address issues related to downtown conservation and development.

Following is a brief summary of the alternative proposals. Copies of the full text of all proposals are on file for inspection at the Department of City Planning, Office of Environmental Review, 45 Hyde Street, Room 319.

(over)

Deadline for Filing of an Appeal of this Determination to the City Planning Commission: February 24, 1981.

An appeal requires 1) a letter specifying the grounds for the appeal, and 2) a $25.00 filing fee.

cc: Attached List.
Dean Macris.
Robert Passmore
George Williams
Lucian Blazej
City Planning Commissioners

Alec S. Bash, Environmental Review Officer

ERS 6/80

Discussion continued

Alternative 1 would consist of the Recommended Growth Management Program presented in Section 3 of the Downtown Growth Management Program, prepared by Bolles Associates and Livingston & Associates for the San Francisco Chamber of Commerce in October 1979.

Source: San Francisco Chamber of Commerce

Reference: Downtown Growth Management Program, Bolles/Livingston - October 1979.

This proposal calls for a reduction in height and revised bulk standards for new construction in the C-3-O zone and calls for base and maximum Floor Area Ratios (FAR) as follows:

Zoning District	Basic F.A.R.	Maximum F.A.R.
C-3-O	12	18
C-3-R	8	12
C-3-G	8	12
C-3-S	7	10.5

Development bonuses would be provided for certain amenities such as plazas, and transfer of development rights are allowed for preservation of landmark quality of buildings. Mandatory design review and implementation of a Transportation Systems Management (TSM) program is also called for.

Alternative 2 would consist of the proposed initiative ordinance, Proposition "O", which was presented to San Francisco in November 1979.

Source: San Franciscans For Reasonable Growth

Reference: Proposition "O" Initiative Ordinance November 1979

This proposal calls for the reduction of height and Floor Area Ratios according to the following schedule:

Zoning District	Basic F.A.R.	Maximum F.A.R.	Maximum Height
C-3-O	8	14	260
C-3-R	7	10	150
C-3-G	5	8	130
C-3-S	5	8	130

In addition, the proposal calls for bonuses for landmark preservation, housing production, and for the development of bonuses for encouraging public transit usage, energy conservation, improved pedestrian environment, and development of additional housing in San Francisco.

The Sedway-Cooke study mirrors Proposition "O". Rather than treating this as a full alternative, it should be considered as a subset of Proposition "O". Only those elements of the Sedway-Cooke proposal that are more restrictive than Proposition "O" should be analyzed for their impact.

Alternative 3 would consist of a package of five initiatives (the "SFRG initiatives") which would have amended the C-3 District regulations of the City Planning Code had they been approved in the November 1980 election. Public notices of the intent to circulate petitions appeared on June 9, 1980, and provide the bases for describing this alternative.

Source: San Franciscans For Reasonable Growth

Reference: Notice of Intention to Circulate a Petition for Six Initiative Ordinances - June 1980

a. **Fair Taxation Initiative**
b. **Annual Limit on Office Development - (use same guidelines as in Alternative 4, below)**
c. Incentive for Preservation
d. Height Reduction
e. Tandem Housing
f. Floor Area Ratios and Bonuses

These proposals call for:

a. Prohibition against downtown development if studies show that public costs of serving downtown development exceed tax revenues, until such time as the cost/revenue balance is restored.

b. Institution of an annual limit on office development of one million square feet.

c. Preservation of landmarks and structures of merit by allowing the transfer of unused development rights at a multiple to be established by ordinance.

d. Reduction of height and bulk limits and the reduction of the C-3 district by ordinance.

e. Construction of one housing unit for every four employees or pay an in-lieu fee to the City.

f. Setting existing base floor area ratios (FAR) as the maximum and new base FAR's at one half existing for each C-3 district, and allowing for bonuses for plazas, housing, preservation, energy conservation, and transportation improvements.

Alternative 4 would place a ceiling on the annual rate of growth in the C-3 District, limiting it to 1.5 million gross square feet per year. This growth rate is intended to approximate the recent growth rate of Downtown development.

Source: Monitoring Panel -- Downtown EIR Program

Guidelines:

a. This alternative would apply to the C-3 zoning districts as currently mapped.

b. The analysis will use the base FAR for each C-3 zoning district without development bonuses.

c. A second level of analysis will be done in which each of the C-3 zoning districts would have a density equal to the base FAR plus an average development bonus of 3.5 FAR.

Alternative 5 would consist of proposed development controls presented in Approaches for Resolving Issues of Downtown Conservation and Development, which is presently in final preparation by the Department of City Planning. A draft of this document was published in September 1980.

Source: Staff -- Department of City Planning

Reference: Approaches for Resolving Issues of Downtown Conservation and Development, Department of City Planning -- September 1980 and revisions.

This proposal calls for a reduction in height and revised bulk standards for new construction in the C-3 districts and calls for revised base and maximum FAR's. A transportation "improvement fee" and other mechanisms for transit improvement are proposed. New office development would be tied to the rate of housing production and transfer of development rights would be allowed when landmarks and structures of merit are preserved. Industrial uses would be protected by forbidding offices as a principal use in manufacturing zones. In order to allow for office and housing development, certain areas would be rezoned. Changes in land use are proposed including both an expansion and contraction of the C-3 district and rezoning of portions of North and South of Market for combined residential and commercial use.

Alternative 6 would consist of existing C-3 regulations with bonuses assumed to be an average of 3.5 FAR over base FAR's. The existing regulations will serve as the base line for analysis of alternatives and may also serve as the maximum "buildout" alternative since rate of growth can be assumed to be determined by market forces.

Source: Department of City Planning

Reference: San Francisco Zoning Ordinance, Zoning Map and Height and Bulk Districts.

The existing zoning ordinance regulates land use, density, building height and bulk, parking and access requirements, transfer of development rights from adjacent parcels, and provides for bonuses for certain features such as plazas, access to public transit, corner location and other aspects deemed to be public amenities. The existing C-3 zoning regulates density by setting forth base FAR's, which with bonuses have allowed for densities of up to 23.6 FAR. The base FAR's are as follows: C-3-O - 14; C-3-R - 10; C-3-G - 10; C-3-S - 7.

Potential Impacts

Significant environmental effects could occur in the following areas if any of the alternative proposals were implemented: land use, urban design and visual, historic buildings, community services, employment and housing, transportation, noise, air quality and climate, and energy. An environmental impact report (EIR) will be needed covering possible impacts in these areas. The alternative proposals would not have significant effects and EIR coverage is not needed on the following areas: geology, biological sciences, use of water or other natural resources, hazards, or archaeological or cultural resources.

Implementation of any of the alternative proposals could conflict with some of objectives and policies in the City's Comprehensive Plan. The EIR will need to address conformity with Master Plan policies under each impact topic. Specific note should be taken of policies and objectives in the Residence Element concerning preserving and maintaining the existing housing stock and in the Comminity Safety Element concerning policies for identifying and removing hazards of existing buildings that would undergo severe damage in the event of a "1906-type" earthquake. Taken together, the Master Plan suggests that existing housing (in the Downtown as well as throughout the City) should be perserved but should also be made earthquake safe. The City Planning Commission has identified buildings in the Downtown area that are of special architectural or historic significance; the Community Safety Element policy on eliminating earthquake hazards would suggest that these buildings should be made earthquake safe. The impacts analysis should include a general discussion under appropriate topics of whether the alternatives would comply with these policies as well as with any others applicable.

Several of the alternative proposals would require both rezoning and changes to the City Planning Code text. The project description in the EIR should describe, as possible, what the rezoning and text changes would need to be for each alternative, and explain the approval process for such amendments.

The alternative proposals could provide for Downtown development different from that which now exists, and the EIR should discuss generally what land use changes might occur under each proposal and should include a discussion of whether or not these land use changes would affect established business and residential communities in San Francisco. This discussion should also cover potential effects of each alternative on both designated landmarks and buildings determined by the City Planning Commission to be architecturally or historically important (Resolution No. 8275, May 29, 1980).

Although urban design and visual impacts cannot be described for specific buildings in analyzing the alternative proposals, any of the alternatives could have a significant visual and urban design impact which must be discussed in a general sense. This general analysis should include an indication of where loss or obstruction of long range views would occur, as well as discussion of changes in views from existing buildings.

Further study is needed regarding whether any of the alternatives would result in need for additional fire and police services and regarding whether or not electricity and natural gas services would need to be altered or increased as a result of development occurring under any of the alternative proposals. Because the school system in San Francisco presently is leasing many of its school sites for non-school use, it can be determined that additional development, particularly in the Downtown area, would not have a significant effect on the school system. Any of the alternative proposals would not be likely to affect existing communication systems, such as television and radio, although individual buildings that might be permitted under one scenario or another could possibly interfere with reception at an adjacent building. Water and sewer services would not be affected specifically by any of the alternative proposals for downtown development control. The City's Clean Water Program staff are designing and managing construction of additional sewer capacity to handle larger storm flows; because storm water volumes can be as much as ten times average dry weather flows, the system capacity would not be affected by new office development Downtown. Solid waste disposal service needs may increase under some alternative scenarios. The City's solid waste disposal system is presently under review by CAO staff because the present contract for disposal at the Mt. View landfill will end in 1983. An EIR (EE79.307/MLA, Resource Conversion Center) has been prepared by the City of Brisbane covering one proposal for solid waste disposal and covering alternative systems, all of which would accommodate increases in solid waste volumes. Therefore, solid waste disposal impacts need be discussed only to the extent that a significant effect may occur and to the extent that increased services are not covered in the Resource Conversion Center EIR. None of the alternatives would specifically impact existing parks or recreation facilities and none specifically proposes to remedy any needs determined in the Recreation Open Space Element of the Comprehensive Plan. Therefore, this topic need not be covered in the EIR.

Any one of the alternative proposals could have a growth inducing impact and could require relocation of housing or businesses; these areas will need further investigation. If any one of the alternative proposals were implemented, indirect impacts could occur on employment in the City and County. Impacts could also occur on availability of and demand for housing in the City. Some alternative proposals could cause changes in either the daytime worker population or the residential population in certain areas of the Downtown; this potential impact needs further investigation. Implementation of any of the alternatives would have economic impacts on the City which, although not required by CEQA, should be discussed as part of this EIR in order to allow for reasoned decision making.

Any of the alternatives, if implemented, would have traffic and parking impacts on the freeway and local street systems and on parking supplies which must be discussed. The alternatives may have significant environmental effects on pedestrian and transit systems and on current circulation patterns and could also cause an increase in traffic hazards. The transportation study will need to include analysis of changes in travel modes that could occur under the various alternatives. Further investigation is needed as to whether any of the alternatives could cause a need for change in configuration of existing public roads. It is not expected that any of the alternatives would create the need for construction of new streets or highways.

The alternative proposals would permit continued new construction in the Downtown, which would cause temporary noise effects. Construction noise impacts occur under the existing situation and it would not be possible to reliably quantify differences in construction noise effects among the various alternative proposals; none of the alternatives would cause a significant adverse change in environmental conditions. Existing noise levels in the Downtown area would not be likely to impact buildings that might be permitted under the alternative scenarios; any new residential buildings that might be impacted by the existing noise levels would need to comply with Title 25 Noise Insulation Standards in the California Administrative Code. Specific noise impacts of or on proposed new office or residential buildings would be more appropriately discussed under environmental analyses for individual buildings, rather than in the subject EIR.

Any of the alternative proposals that would permit additional building in the Downtown area would indirectly add to the existing air pollutant load. Although individual buildings may not, either during construction or by virtue of traffic generated during operation, cause violations of ambient air quality standards, building that could be permitted under some of the alternative scenarios could cumulatively cause air quality standards to be violated. This area needs further invistigation before a determination of significance can be made. None of the alternative scenarios would indirectly cause the creation of objectionable odors or include burning. Any alternative which allowed construction of high-rise buildings in the Downtown area could have significant impacts on wind patterns and on shading; both of these areas need to be investigated at a general level, consistent with the level of detail available for each of the alternatives.

Alternatives that would permit building additional square footage of either office or residential space in the study area would increase energy consumption in the City. Some alternative proposals could caues substantial increases in demand on the PG&E system. These areas need further study, again at a general level, discussing cumulative effects rather than individual building effects.

Because Downtown San Francisco is already fully built, there would be no impact on plant or animal life from any of the alternatives. Neither storm water run-off nor the quality of the public water supply would be affected by any of the alternatives. The quality of surface water would not be changed by the proposed projects. Although water use could be increased as an indirect effect of the implementation of some of the alternatives, the increase would not be significant when compared to the overall City water use. Other than energy, use of natural resources would not be affected by any of the alternatives. Implementation of any one of the alternative proposals would not change any potential for exposure of the public to hazards such as explosion or release of hazardous substances, nor would any of them interfere with the City's emergency response plan. Although construction that may be permitted under some of the alternative scenarios may require grading or excavation may generate spoils, these topics would be more appropriately treated under review of individual building proposals. Implementation of any one of the alternative scenarios would not in and of itself cause any effect on archaeological resources or ethnic or cultural resources; specific archaeological impacts of specific buildings possible under any one of the scenarios should not be discussed in this document.

Because the "project" is a group of alternative proposals, additional alternatives that may have been considered need be discussed only at a very general level of detail with enough information to explain why they are not expected to be considered for adoption. Mitigation measures that would reduce impacts of any of the alternatives must be covered in the EIR. It may be that some or all of the features of one alternative would mitigate or reduce impacts of other alternatives; if this is found during the project analysis, the mitigation measures discussion should so note.

ENVIRONMENTAL EVALUATION CHECKLIST

(Initial Study)

Appendix A

Project File No: EE 81.3 Title: Downtown San Francisco Planning Alternatives

Address: City and County of San Francisco Assessor's Block and Lot: C-3 Zoning Di

	Yes	Maybe	No	N/A	D
A. GENERAL CONSIDERATIONS:					
1. Would the project conflict with objectives and policies in the Comprehensive Plan (Master Plan) of the City?		X			
2. Would the project require a variance, or other special authorization under the City Planning Code?		X			
3. Would the project require approval of permits from City Departments other than DCP or BBI, or from Regional, State or Federal Agencies?			X		
*4. Would the project conflict with adopted environmental plans and goals?		X			
B. ENVIRONMENTAL IMPACTS:					
1. Land Use. Would the proposed projects:					
a. Be different from surrounding land uses?		X			
*b. Disrupt or divide the physical arrangement of an established community?		X			
2. Visual Quality and Urban Design. Would the proposed project:					
a. Obstruct or degrade any scenic view or vista open to the public?		X			
b. Reduce or obstruct views from adjacent or nearby buildings?		X			
*c. Create a negative aesthetic effect?		X			
d. Generate light or glare affecting other properties?			X		
3. Population/Employment/Housing. Would the proposed project:					
a. Alter the density of the area population?		X			

**Further discussion warranted

		Yes	Maybe	No	N/A	Disc.
3.	Cont'd.					
*b.	Have a growth-inducing effect?		X			X
*c.	Require relocation of housing or businesses, with a displacement of people, in order to clear the site?		X			X
d.	Create or eliminate jobs during construction and operation and maintenance of the project?	X				
e.	Create an additional demand for housing in San Francisco?	X				X
4.	Transportation/Circulation. Would the construction or operation of the project result in:					
a.	Change in use of existing transportation systems? (transit, roadways, pedestrian ways, etc.)	X				X
*b.	An increase in traffic which is substantial in relation to existing loads and street capacity?	X				X
c.	Effects on existing parking facilities, or demand for new parking?	X				X
d.	Alteration to current patterns of circulation or movement of people and/or goods?		X			X
e.	Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?		X			X
f.	A need for maintenance or improvement or change in configuration of existing public roads or facilities?		X			X
g.	Construction of new public roads?			X		X
5.	Noise.					
a.	Would the proposed project result in generation of noise levels in excess of those currently existing in the area?	X				X
b.	Would existing noise levels impact the proposed use?			X		
c.	Are Title 25 Noise Insulation Standards applicable?	X				X

	Yes	Maybe	No	N/A	Disc.
6. Air Quality/Climate. Would the proposed project result in:					
*a. Violation of any ambient quality standard or contribution to an existing air quality violation?		X			X
*b. Exposure of sensitive receptors to air pollutants?		X			
c. Creation of objectionable odors?			X		X
d. Burning of any materials including brush, trees, or construction materials?			X		X
e. Alteration of wind, moisture, or temperature (including sun shading effects), or any change in climate, either locally or regionally?	X				X
7. Utilities and Public Services. Would the proposed project:					
a. Have an effect upon, or result in a need for new or altered, governmental services in any of the following?					
fire protection		X			X
police protection		X			X
schools			X		X
*parks or other recreational facilities			X		X
maintenance of public facilities			X		
power or natural gas		X			X
communications systems			X		X
water			X		X
*sewer/storm water drainage			X		X
solid waste collection and disposal		X			X
8. Biology.					
a. Would there be a reduction in plant and/or animal habitat or interference with the movement of migratory fish or wildlife species?			X		
*b. Would the project affect the existence or habitat of any rare, endangered or unique species located on or near the site?			X		
c. Would the project require removal of mature scenic trees?			X		

9. Land. (topography, soils, geology) Would proposed project result in or be subject to:					
*a. Potentially hazardous geologic or soils conditions on or immediately adjoining the site? (slides, subsidence, erosion, and liquefaction)		X			
b. Grading? (consider height, steepness and visibility of proposed slopes; consider effect of grading on trees and ridge tops)	X				X
c. Generation of substantial spoils during site preparation, grading, dredging or fill?	X				N
0. Water. Would the proposed project result in:					
*a. Reduction in the quality of surface water?			X		X
*b. Change in runoff or alteration to drainage patterns?			X		X
*c. Change in water use?		X			X
*d. Change in quality of public water supply or in quality or quantity (dewatering) of ground water?			V		
1. Energy/Natural Resources. Would the proposed project result in:					
*a. Any change in consumption of energy?		X			
*b. Substantial increase in demand on existing energy sources?		X			X
c. An effect on the potential use, extraction, conservation or depletion of a natural resource?			X		
2. Hazards. Would the proposed project result in:					
*a. Increased risk of explosion or release of hazardous substances (e.g. , oil, pesticides, chemicals or radiation), in the event of an accident, or cause other dangers to public health and safety?			X		X
*b. Creation of or exposure to a potential health hazard.			X		
*c. Possible interference with an emergency response plan or emergency evacuation plan?			X		X

13. Cultural. Would the proposed project:	Yes	Maybe	No	.N/A
*a. Include or affect a historic site, structure, or building?	X			
*b. Include or affect a known archaeological resource or an area of archaeological resource potential?		X	~~X~~	
*c. Cause a physical change affecting unique ethnic or cultural values?			X	

C. MITIGATION MEASURES:	Yes	No	Di
Are mitigation measures included in the project?	X		
Are other mitigation measures available?	X		
D. ALTERNATIVES:			
Were other alternatives considered:	X		
E. MANDATORY FINDINGS OF SIGNIFICANCE:			
*1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal, or eliminate important examples of the major periods of California history or prehistory?	X		
*2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	X		
*3. Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects?)	X		
*4. Would the project cause substantial adverse effects on human beings, either directly or indirectly?		X	
*5. Is there a serious public controversy concerning the possible environmental effect of the project?	X		

n the basis of this initial evaluation:

___ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

___ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers____, in the discussion have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

✓ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Robert W. Passmore
Assistant Director-Implementation

for

Rai Y. Okamoto
Director

Date: 2-10-81

APPENDIX B: ALTERNATIVES

Appendix B of Growth Management Alternatives for Downtown San Francisco: Downtown EIR Consultant's Report /1/ presents the texts of Alternatives 1 through 5 as they appear in their source documents. That Appendix B is hereby incorporated by reference into this Appendix B. The Alternatives are described briefly below and in Section VII.1, page VII.1.

ALTERNATIVE 1

Alternative 1 (the "Planning Code Alternative") consists of those portions of the San Francisco City Planning Code that pertain directly to the C-3 District. The entire Code, which provides an overall regulatory context for all Alternatives and has occasional, though generally incidental, application to the C-3 District and other use districts incorporated in other Alternatives addressed in this report, is hereby incorporated by reference into this EIR./2/

ALTERNATIVE 2

Alternative 2 (the "Chamber of Commerce Alternative") consists of Chapter 3, "Recommendations for Managing Downtown Growth," from the Downtown Growth Management Program, prepared for the San Francisco Chamber of Commerce by Bolles Associates and Livingston & Associates, October 1979. The entire Downtown Growth Management Program, which provides the background and rationale for Chapter 3, is hereby incorporated by reference into this EIR./2/

ALTERNATIVE 3

Alternative 3 (the "Proposition 'O' Alternative") consists of "Proposition 'O'," which appeared on the San Francisco City Ballot, and was defeated, in November 1979. The 1979 Proposition "O" voters' handbook entitled "Proposition 'O' Initiative Ordinance: Shall the Planning Code be Amended to Establish Reduced Building Height Limits, New Basic Floor Area Ratios and Development Bonuses in the Downtown Area; Prohibiting Certain Zoning Reclassifications?" provides an analysis, background, and arguments for and against the proposition, and is hereby incorporated by reference into this EIR./2/

ALTERNATIVE 4

Alternative 4 (the "SFRG Alternative") consists of four of a series of five initiative ordinances proposed in 1980 by San Franciscans for Reasonable Growth (SFRG)./3/ The four initiatives would have amended the C-3 District regulations of the City Planning Code had they appeared on the ballot and been approved in the November 1980 election. Public notices of the intent to circulate the initiative petitions appeared on June 9, 1980. These notices, together with an explanatory letter prepared by SFRG, dated September 23, 1981, provide the full description of this Alternative, and are hereby incorporated by reference into this EIR./2/

ALTERNATIVE 5

Alternative 5 (the "DCP Alternative") consists of the proposed development controls for the C-3 District presented in Guiding Downtown Development, issued by the Department of City Planning (DCP) in July 1982. Guiding Downtown Development and its Appendices, which contain explanations, background, elaboration, and implementing code language, are hereby incorporated by reference into this EIR./2/

NOTES - Appendix B

/1/ Growth Management Alternatives for Downtown San Francisco / Downtown EIR Consultant's Report, Environmental Science Associates, Inc., May 1983./2/

/2/ Documents incorporated by reference into this EIR are available for public inspection at the San Francisco Department of City Planning, 450 McAllister Street, 5th Floor.

/3/ The fifth initiative, which would have limited new commercial office development in the City to 1.0 million sq. ft. per year, is treated herein as a mitigation measure (see Section V.) for all Alternatives.

APPENDIX C: C-3 DISTRICT LAND USE INVENTORY

INTRODUCTION

A land use inventory of the C-3 District was conducted to provide a base case from which the land use impacts of the Downtown Plan and Alternatives could be analyzed. This approach was preferred to attempting to compile and integrate disparate land use information from existing sources which had been prepared for different purposes for different areas, at different times, and to different levels of detail. This appendix documents the inventory procedures. The completed inventory is available for public review at the Department of City Planning, 450 McAllister Street, 5th Floor.

PROCEDURES

The first step was to design a field instrument (inventory form) that could be used to record the use conditions on each lot of each block in the C-3 District. The form was designed to correspond to the Sub-Area Profile Reports used by the Department of City Planning, and to include additional information necessary for analysis of the C-3 District.

Nineteen land use categories were defined to cover the principal uses expected in the C-3 District. The list below includes brief definitions of the uses covered in each category:

- Office - all general office space including data processing facilities. Includes conversions from other uses, such as industrial, only when office occupant obvious to field researcher.

- Branch Bank - customer banking facilities separately identified from rest of space in building.

- Retail - major department stores and ground floor retail, other establishments serving walk-in customers, as well as service stations, auto repair shops and garages.

- Restaurant/Bar - coffee shops, delicatessens, and fast-food establishments, in addition to full-service restaurants and bars.

- Other - vacant lots and vacant space including parts of buildings (e.g. upper floors), private clubs and associations, PG&E substations, warehouses, Moscone Center, bus terminals and miscellaneous uses not classified elsewhere.

- Hotel, Transient - commercial, short-term hotel accommodations.

- Hotel, Residential - facilities with rooms to let for the day, week and month.

- Residential - apartment buildings and other housing units.

- Parking - parking facilities available to the public, for which a fee is charged, and private parking facilities.

- Industrial - space for wholesale, light manufacturing and heavy manufacturing activities, e.g. wholesale goods storage, food and liquor distributors, printers, machine shops, garment and electronics manufacturing.

- Government - government-owned office space, courtrooms, and government social services facilities.

- Educational - public and private schools.

- Institutional - museums, churches, libraries, firehouses, and police stations.

- Theater - stage and film theaters.

- Non-Profit Community Purposes - private social service facilities.

The inventory field work was conducted in late 1981 and early 1982. Field researchers listed building address, type(s) of use(s), number of floors and estimated lot coverage. They also estimated the number of units for residential uses. City block and lot numbers and lot areas (gross sq. ft.) were recorded on the inventory forms from Real-Dex Atlas parcel maps./1/

Sanborn Maps/2/ were used to obtain the percentage of building coverage on the lot in instances where it could not be accurately determined from field observations, and to confirm field observations. Lot coverages were revised in instances where field observations varied significantly from data in the Sanborn Maps. These maps were also used to obtain the building heights of most of the buildings identified in the inventory.

Upon completion of the inventory field work, the gross square footage was calculated for each building. The calculation was based on the total lot area multiplied by the number of floors, adjusted for any setbacks at upper floors. In instances where buildings did not completely cover their lots, the gross square footage estimates were multiplied again by the percentage of building coverage on the lot. The field observations of the mix of uses in a building (number of floors by use) were the basis for calculations of gross sq. ft. by use.

The Polk Directory/3/ was used to provide correct addresses in instances where addresses were not available from field observations. In addition, the Directory helped to verify the number of housing units in residential buildings.

Several existing data sources were consulted to spot-check the inventory and confirm that the gross square footage estimates compiled from the field work were compatible with other sources of land use information. Inventory estimates for office and retail uses were compared with data compiled by the Department of City Planning for new office development, the Real-Dex Atlas, the Building Owners and Managers Association (BOMA) and with real estate data collected by Coldwell Banker, a private real estate firm. These spot-checks confirmed that every major project built since 1945 was included and that estimates were reasonable.

Upon completion of inventory forms, the data base was entered into a computer system. To ensure that inventory data had been translated correctly from the field instrument, entries were reviewed and validated again for consistency of lot size, number of floors and building size. It was determined that the accuracy of the computerized inventory was adequate for the purposes of this study./4/

USE OF THE INVENTORY

The inventory's nineteen land use categories were grouped according to the most useful analytical distinctions. For example, Table IV.B.1 (page IV.B.2) shows the distribution of space in the C-3 District by use and subarea, for 1981. This table presents the results of the land use inventory in the form in which they are most commonly used in this EIR. There are eight land use categories. The correspondence between these eight analytic categories and the inventory categories is shown below:

EIR Analysis Category	Inventory Category
Office	Office, branch bank, government
Retail	Retail (excluding auto repair shops and garages), restaurants and bars
Transient hotel	Transient hotel
Residential hotel	Residential hotel
Housing	Residential
Cultural/Institutional/ Education/Other	Educational, institutional, theater, other
Industrial/Warehouse/Automotive	Industrial (including auto repair shops and garages)
Parking	Public and private parking

The land use inventory, reflecting late 1981 and early 1982 land use conditions in the C-3 District, was used as the sampling list for the Downtown EIR Employer and Employee surveys. Appendix F describes the sampling methodology and procedures for these surveys. The inventory was also used in the employment analysis to estimate current C-3 District employment. Appendix H describes the methodology for the employment analysis and forecasts.

The land use inventory estimates of lot size and building size, by location, were used in the development feasibility component of the real estate analysis. Appendix G, Land Use and Real Estate Development Analysis, describes the methodology and procedures of this analysis.

The inventory document available for public review incorporates the late 1981/early 1982 base (as shown in Table IV.B.1) and projects under construction in the C-3 District. The list of projects under construction, indicating gross square footage by use, was supplied by the Department of City Planning. These projects were entered on the appropriate blocks and lots in place of the inventory estimates of gross square footage for existing uses on the site. The 1984 C-3 District setting reflects these conditions, plus the conversion and upgrading of existing space.

NOTES - Land Use Inventory

/1/ The Real-Dex Atlas is published by Real Estate Data, Inc., of Miami, Florida (REDI). It provides land use information on a lot by lot basis. The Atlas includes: 1) parcel maps which are dimensioned and identify block numbers, lot numbers, zoning classifications, addresses and street names; 2) volumes which list type of use, name of business establishment, name of property owner, lot numbers, building addresses, gross square footage, etc. The Atlas is revised annually.

/2/ Sanborn Maps identify building coverage on the lot, building height and number of stories, and land use.

/3/ R.L. Polk and Co., 1981 San Francisco City Directory, Dallas, Texas. The Polk Directory lists addresses, names of commercial establishments, names of residents and property owners. The Directory is organized alphabetically by last name and by street address.

/4/ The data in the land use inventory are estimates and cannot necessarily be relied upon for site-specific information. They are used in the study to provide aggregated information on C-3 District and subarea land use patterns.

APPENDIX D: CONSTRUCTION FEASIBILITY ANALYSIS

INTRODUCTION

General

The construction feasibility analysis determines how the policies of the Plan could affect the design and construction cost of future individual development projects in the C-3 district. Policies regarding the design, size, height, bulk, location, and cost of new buildings affect the feasibility, magnitude and distribution of new development.

The construction feasibility analysis of the Downtown Plan required a variation of the approach used in the Consultant's Report to determine the effects of the five Alternatives./1/ For the analysis of the Alternatives, a limited number of prototype buildings were devised that could be assumed to satisfy height, bulk, use and other design requirements in the various height and bulk districts proposed under each Alternative. For the Downtown Plan it was not possible to accurately generalize about the effects of the rules that would govern new development in the areas of the C-3 district that would be subject to the most intensive development activity. In addition to height, bulk and FAR requirements, the Plan includes other building design criteria, such as mandatory streetwall setbacks and sun access, which have different applications in different locations, making generalized prototypes inappropriate for this analysis. Therefore, the approach to the analysis of the Downtown Plan policies in these areas (the C-3-0, C-3-0 (SD) and C-3-R use districts) was to select the most likely development sites ("opportunity sites") and to determine how much new development would be permitted on these sites, under the applicable policies of the Plan./2/

Areas Included in Analysis

As indicated in Appendix G (see p. G.2), detailed analysis of opportunity sites was carried out for the C-3-0 (Subarea 1), the C-3-0 (SD) (Subarea 2), and the C-3-R (Subarea 6) use districts. These are the areas where the majority of development activity in the C-3 district is forecast to occur before the year 2000 and also the areas where the policies of the Plan are most specific and most interdependent in terms of the Plan's goal to redirect downtown office expansion from north of Market Street to south of Market Street, east of YBC.

Areas Excluded from Analysis

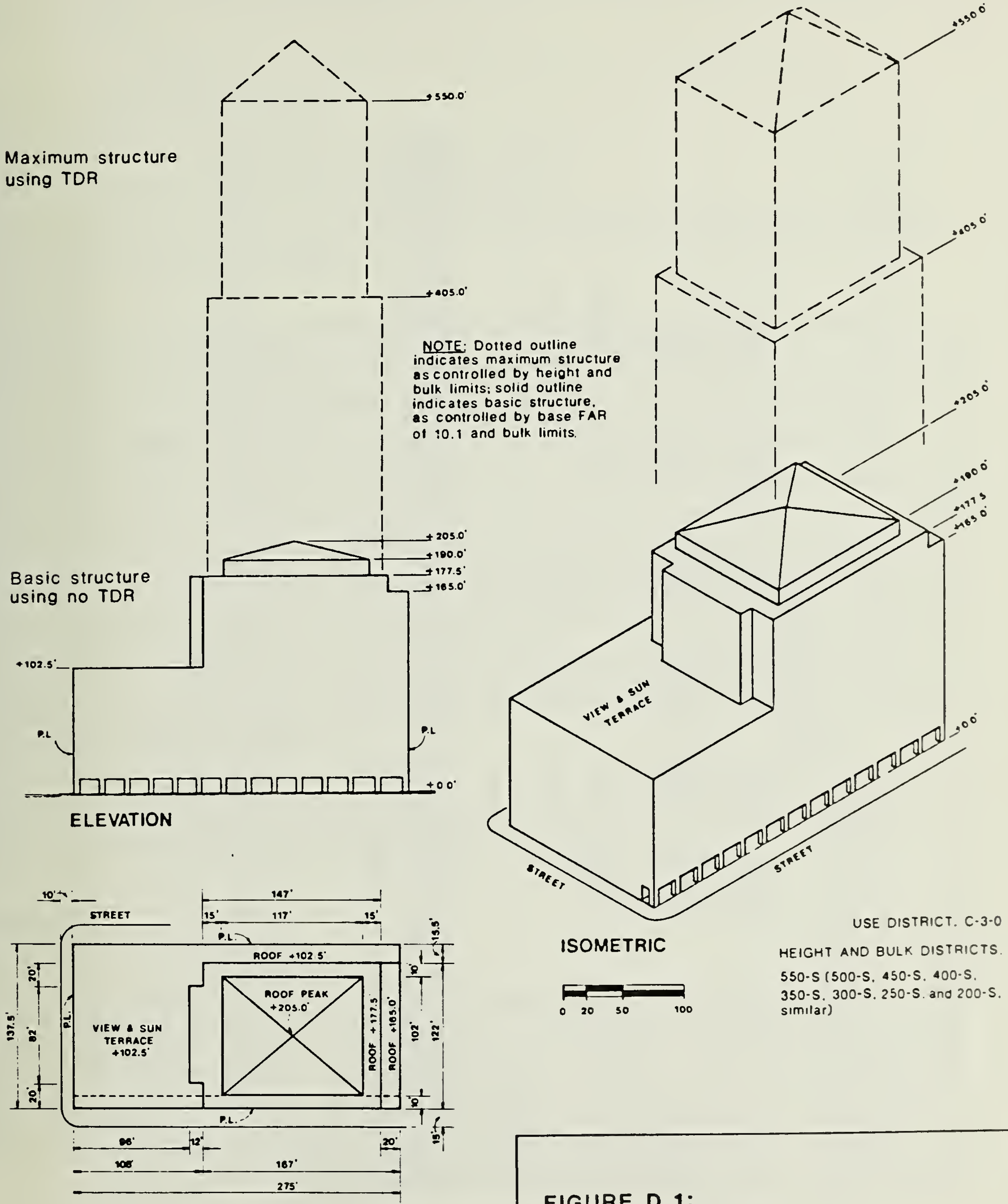
Review of the Downtown Plan policies indicated that no special incentives were proposed to encourage development in Subareas 3, 4, and 5, encompassing the C-3-S and C-3-G use districts. In fact, the opportunities for major new development would be limited due to downzoning and lowered height limits in certain areas. Because of the relatively small development potential of these areas by the year 2000 and the Plan's emphasis on shifting development to the east, and south of Market Street (and not in the direction of these subareas), the forecast methodology for Subareas 3, 4, and 5 was the same as that used for the Alternatives, rather than a detailed analysis of opportunity sites. As Subarea 7 is substantially excluded from the planning area addressed in the Downtown Plan, it is also excluded from analysis as a source of opportunity sites.

METHODOLOGY

Step 1

By designing a "maximum" prototypical building that could be built on an opportunity site under the provisions of the Downtown Plan, it is possible to estimate the maximum amount of new development that could occur on the site under the rules of the Plan. The first step in the construction feasibility analysis was to "design" such maximum prototypes for each opportunity site identified in the real estate analysis./2/ An example of such a design, for a hypothetical lot in the Plan's most permissive C-3-0 height district (550 ft.) is shown in Figure D.1. This example illustrates the first step of the process that was used for the construction feasibility analyses, but it does not represent an actual prototype, as the hypothetical lot is larger than any actual opportunity site in the Plan's most permissive height district.

At this initial step in the analysis, the prototype analysis, or design, generally consisted of the sketches and calculations necessary to compute the maximum building square footage. For each prototype developed, a "prototype building summary" was also prepared that contained the estimate of maximum allowable floor area. The summaries are in the form of diagrams, tables and computer printouts, which are on file and available for public inspection at the Department of City Planning./3/ An example of the summary for the hypothetical prototype depicted in Figure D.1 is shown in Table D.1, page D.4.



NOTE: Dotted outline indicates maximum structure as controlled by height and bulk limits; solid outline indicates basic structure, as controlled by base FAR of 10.1 and bulk limits.

USE DISTRICT. C-3-0

HEIGHT AND BULK DISTRICTS.
550-S (500-S, 450-S, 400-S, 350-S, 300-S, 250-S, and 200-S, similar)

FIGURE D.1:
DOWNTOWN PLAN
SAMPLE BUILDING PROTOTYPE

SOURCE: Roger Owen Boyer and Associates

TABLE D.1: PROTOTYPE BUILDING SUMMARY FOR DOWNTOWN PLAN SAMPLE BUILDING PROTOTYPE

Use District: C-3-0 Height District: 550-S Base FAR: 10:1 Site Area (SF): Prototype No.1: 38,812.5 SF

Using TDR to Reach Maximum Permitted Building Envelope:

			Total Gross Sq. Ft. (GSF)				
Floor Level	No. Floors	Actual GSF/Floor	Actual Gross SF	Plan Gross SF	Code Gross SF	Height per Floor (ft.)	Roof Level (ft.)
1st	1	37,812.5	37,812.5	-0-	35,062	15	+15
2nd - 8th	7	37,812.5	264,687.5	259,394	264,688	12.5	+102.5
9th -13th	5	21,358	106,790	104,654	106,790	12.5	+165
14th - 32nd	19 (1 Mech.)	18,918	359,442	333,714	340,524	12.5	+405
33rd - 43rd	11	11,934	131,274	128,649	131,274	12.5	+542.5
44th -47th	4 (4 Mech.)	6,432.75 (avg.)	25,731	-0-	-0-	12.5	+600 (Peak)
TOTALS	47	-	925,737	826,411	878,338	-	+600 (Peak)
FAR (Gross SF ÷ Site Area)	-	-	24.48:1	21.29:1	22.63:1	-	-

Unit Construction Cost: Estimated $116.61 per Actual GSF. Assumes 10% increase over average cost per GSF of $106 (8% for three building setbacks and sloped roof; 1% for artwork; and 1% for roof terrace and facade treatment). Unit prices are 1983 constant dollars derived from historical cost data for construction in downtown San Francisco for different sizes and types of buildings (Lee Saylor, Inc., Construction Cost Estimators, January 1983).
Total Construction Cost: $116.61 / Actual GSF x 963,550 Actual GSF = $112.36 million

NOTES:

1. Approximately 80% of open space requirement is located on site as a roof terrace, balance is located off-site.
2. Prototype locations with sun access restrictions will be smaller in size, depending on degree of restrictions and review procedures.
3. This prototype does not apply to sites with Category I or II significant buildings.
4. This prototype has no offices located on the ground floor.
5. Prototype size and cost may vary up to 1/2 of 1% due to streetwall height restrictions.
6. Design assumptions include streetwall height = 102.5 ft. with 15.5 ft. setback; lot has buildings adjacent on one side; 20.0 ft. and 35.0 ft. setbacks on one side due to Chart C, Figure 10 of the Plan; actual gross area of a typical floor is 2% larger than Plan gross area due to bay windows and/or recessed windows; 5 mechanical levels (4 in peak); no parking spaces; loading docks as required on first floor.
7. Code GSF and Code FAR are calculated according to the Planning Code, as current in January 1984. The footprint FAR is 21.3 calculated according to the Downtown Plan. When site areas from which TDRs are transferred are included in the total FAR calculations for the project site and all sites from which TDRs are transferred, the overall FAR for all sites would not exceed 10:1.

SOURCE: Roger Owen Boyer and Associates

As may be seen in Table D.1, the prototype building summaries indicate the following for each prototype:

- use district
- height and bulk district
- site area, building floor area, and on-site FAR
- estimated unit and total construction costs
- specific provisions of the Downtown Plan as they are reflected in the design of the particular prototype.

The maximum building designs were prepared without regard for the base FAR proposed in the Plan. That is, the maximum designs generally presumed that transferred development rights (TDR) would be used to achieve maximum feasible floor areas on the opportunity sites. Even though the base FAR was ignored as a limiting factor at this stage, the "maximum" feasible floor area on a given opportunity site was not necessarily very large (e.g. FAR of greater than 20:1), because other factors, such as the site size, height limits and setback requirements, frequently combined to constrain the building envelope. In fact, for some opportunity sites, these other factors limited maximum feasible floor area ratios to less than the base FAR. In these cases, TDR would not be required to achieve the theoretical maximum building size. A comprehensive summary of the provisions of the Downtown Plan that would affect building design is presented in Section III, Project Description, Table III.1, p. III.2.

The averages and ranges of the FARs for maximum development on opportunity sites in the C-3-0 and C-3-0 (SD) use districts are shown in Table D.2.

Step 2

The maximum building prototypes developed in Step 1 of the construction feasibility analysis were considered in the real estate analysis described in Appendix G. As a result of factors considered in the real estate analysis (see Appendix G, beginning at p. G.3), the maximum floor areas of the prototypes were adjusted to yield "likely" floor areas, which, in many cases were less than the maximums. In Step 2 of the construction feasibility analysis, these "likely" building floor areas for the opportunity sites were converted into schematic building designs (again applying the applicable provisions of the Plan) as necessary to provide visual information for the urban design analyses and graphics presented in Section IV.H.

TABLE D.2: AVERAGES AND RANGES OF MAXIMUM FLOOR AREA RATIOS (FARs) ON OPPORTUNITY SITES IN C-3-0 USE DISTRICTS UNDER THE DOWNTOWN PLAN

	Average FAR (a)	Range of FARs (a)
C-3-0 North of Market Street	13.6:1	6:1 to 23:1
C-3-0 South of Market Street	20.3:1	10:1 to 30:1 (b)
C-3-0 Special District	14:1	10:1 to 25:1

(a) Floor area ratios are calculated on the basis of square footages that would be counted according to the Plan's proposed revisions to the current Planning Code. That is, area outside the average line of window glass and portions of bay windows (see Plan, p. 105), and ground floor area (see Plan, p. 29), are not counted in calculating FARs. As with the present Planning Code, mechanical, parking and elevator areas are also not counted. FARs shown are for the building on the opportunity site only. When site and floor areas of sites from which TDRs are transferred are included in the total FAR calculations, the FAR would not exceed 10:1.

(b) This does not include Rincon Annex.

SOURCE: Roger Owen Boyer and Associates and Recht Hausrath & Associates

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NOTES - Appendix D

/1/ The construction feasibility analyses for the Alternatives are presented in Appendix D of the Downtown EIR Consultant's Report, which is hereby incorporated by reference into this EIR.

/2/ See Appendix G, page G.2 for discussion of the methodology for selection of opportunity sites.

/3/ Prototype building summaries for all prototypes are available for public review at the Department of City Planning, 450 McAllister Street, 5th Floor.

APPENDIX E: ARCHITECTURAL RESOURCE EVALUATION

SAN FRANCISCO DEPARTMENT OF CITY PLANNING SURVEY

Between 1974 and 1976, the San Francisco Department of City Planning (DCP) conducted a citywide inventory of architecturally significant buildings. An advisory review committee of architects and architectural historians/1/ assisted in the final determination of ratings for the approximately 10,000 buildings which were entered in an unpublished 60-volume record of the inventory. The rated buildings have been represented on a set of color-coded maps which identify the location and relative significance of each building surveyed. The maps are available for public inspection at the Department of City Planning, 450 McAllister Street./2/

The inventory assessed the architectural significance of the surveyed buildings from the standpoints of overall design quality and particular design elements. Both contemporary and older buildings were included, but their historical importance was not considered. Each building was given a numerical rating that summarized its architectural significance. This rating included consideration of its urban design context and overall environmental significance. The ratings ranged from a low of "0" to a high of "5". The buildings were also given a separate classification based on their architectural quality. In the estimation of the inventory participants, buildings included in the survey represent the best 10% of the City's architecture; those rated "3" or higher represent approximately the best two percent.

HERITAGE SURVEY

The Foundation for San Francisco's Architectural Heritage, through its consultants, Charles Hall Page & Associates, Inc., conducted an architectural and historical survey of a portion of the C-3 Use District in 1979. The inventory results were published in the book entitled Splendid Survivors./3/ Each building and parcel within the study area was described on field survey cards, photographed, and researched. Criteria considered in rating the buildings included architectural significance, historical/cultural significance, environmental significance and alterations that detracted from the quality of the building. Summary ratings from "A" to "D" were then assigned to each building on the basis of these ratings. The evaluated survey was reviewed a second time by an outside panel of experts./4/ This evaluation of each parcel is supported by a file which is available for review at the DCP and Heritage. The description of the final evaluation contained on pages 12 and 13 of Splendid Survivors follows:

A. Highest Importance - Individually the most important buildings in downtown San Francisco, distinguished by outstanding qualities of architecture, historical values, and relationship to the environment. All A-group buildings are eligible for the National Register and are considered to be of highest priority for City Landmark status.

B. Major Importance - Buildings which are of individual importance by virtue of architectural, historical and environmental criteria. These buildings tend to stand out for their overall quality rather than for any particular outstanding characteristics. B-group buildings are considered to be eligible for listing on the National Register.

C. Contextual Importance - Buildings which are distinguished by their scale, materials, compositional treatment, cornice or other features. They provide the setting for more important buildings and they add visual richness and character to the downtown area. Many C-group buildings may be eligible for the National Register as part of historic districts.

D. Minor or No Importance - Buildings which are insignificant examples of architecture by virtue of original design, or more frequently, insensitive remodeling.

NOT RATED: Buildings which have been built or have undergone insensitive exterior remodelings since 1945./5/

In 1982, Heritage surveyed the portion of the C-3 Use District which had been excluded from Splendid Survivors. This survey was completed using the same system of evaluation as was used in the original Splendid Survivors survey. Like the original survey, the supplemental survey was reviewed a second time by an outside panel of experts./6/ The evaluation of each parcel in this supplemental survey is also supported by a file which is available for public review at the DCP and Heritage. The file lists buildings by address in alphabetical and numerical order. The following information, when available, is included for each entry: name of the structure, block and lot number, date of construction, height of the building in stories, and the architect, engineer, builder or contractor.

NATIONAL REGISTER OF HISTORIC PLACES

The National Register of Historic Places is a list of cultural resources which are architecturally, historically and culturally significant to the nation, the states, and individual localities. The list is maintained by the U.S. Department of the Interior. A listing on the National Register provides a degree of protection against demolition or alteration by federally licensed or funded projects. However, it affords no direct protection from private development, and therefore has limited legal usefulness in preserving buildings in downtown San Francisco. Properties listed on the National Register are eligible for a variety of grants and loans, and for tax relief under federal tax policies. The above factors may contribute to the preservation of a building and would also discourage the demolition of a Natonal Register Property by a federally funded project.

Presently, there are nine individual C-3 District buildings on the National Register of Historic Places (see Table E-1). Lotta's Fountain and the Cable Cars are also listed. In addition to these National Register Properties, the National Park Service also designates National Historic Landmarks. National Historic Landmarks are National Register Properties which have been given a higher degree of recognition but no greater legal protection. The three National Historic Landmarks in the C-3 District are the Cable Cars, the Old U.S. Mint at Fifth and Mission Streets, and the Bank of Italy Building at 552 Montgomery Street.

CITY LANDMARKS

The San Francisco Planning Code provides for the designation of structures, sites and areas of special character or historical, architectural or aesthetic interest as City Landmarks (see Table E.2). In addition to the recognition it entails, the designation of a structure as a City Landmark requires special review of exterior alterations and may involve a delay in demolition for up to one year after a demolition permit application is filed./7/

TABLE E.1: C-3 DISTRICT BUILDINGS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES

Name	Address	Block/Lot	City Landmark
Audiffred Building	1-21 Mission St.	3715/1	Yes
Bank of Italy(America)	552 Montgomery St.	228/28	No
Geary Theatre	415 Geary St.	316/1A	Yes
Hallidie Building	130 Sutter St.	288/27	Yes
Jessie St. Substation	220 Jessie St.	3706/70	Yes
Main Post Office	95 Seventh St.	3703/41	Yes
Mills Building	220 Montgomery St.	268/6,7,8	Yes
Old U.S. Mint	5th and Mission Sts.	3704/11	No
Rincon Postal Annex	Mission at Spear Sts. (55-77 Mission St.)	3716/1	Yes

SOURCE: National Register of Historic Places, Federal Register, Volume 44, No. 26. February 6, 1979 as updated Feb. 1980, Feb. 1981, Feb. 1982.

TABLE E.2: CITY LANDMARKS IN THE C-3 DISTRICT

Name	Address	Block/Lot
Bank of California	400 California St.	239/3
Audiffred Building	1-21 Mission St.	3715/1
Garden Court of the Palace Hotel	New Mont. / Market St.	3707/52
Original U.S. Mint and Subtreasury	608 Commercial St.	227/29
Hallidie Building	130 Sutter St.	288/27
V.C. Morris Building	140 Maiden Ln.	309/19
Lotta's Fountain	Pedestrian Island/Geary/ Kearny Sts.	
Mills Bldg. and Tower	220 Montgomery St.	268/6,7,8
Samuels Clock	Sidewalk at Market/Powell Sts.	
Geary Theater	415 Geary Blvd.	316/1A
Jessie Street Substation	220 Jessie St.	3706/70
Rincon Postal Annex	Mission at Spear Sts.	3716/1
A. Borel & Co.	440 Montgomery St.	239/12
Italian-American Bank	460 Montgomery St.	239/14
S.F. Mining Exchange	350 Bush St.	269/3
Hammersmith Building	301-303 Sutter St.	294/1
Hibernia Bank	1 Jones St.	349/3
Union Trust Bank of Wells Fargo	744 Market St.	312/6

TABLE E.2: CITY LANDMARKS IN THE C-3 DISTRICT (Continued)

Name	Address	Block/Lot
BSecurity Pacific Bank	1 Grant Ave.	313/8
Mechanics Institute	57-65 Post St.	311/13
Home Telephone Bldg.	333 Grant Ave.	286/2
PG&E Old Station J	569 Commercial St	228/11
Old Firestation No. 2	466 Bush St.	270/9c
The Hoffman Grill	619 Market St.	3707/55
Buich Building	240 California St.	237/9
Jack's Restaurant	615 Sacramento St.	240/14
Flood Building	870-898 Market St.	329/5
Flatiron Building	540-548 Market St.	291/1
Phelan Building	760-784 Market St.	328/1
St. Patricks Church	756 Mission St.	3706/68
Old St. Marys Church	680 California St.	241/12

SOURCE: San Francisco City Planning Code

ARCHITECTURALLY AND/OR HISTORICALLY SIGNIFICANT BUILDINGS

On May 29, 1980, the San Francisco City Planning Commission approved Resolution No. 8600, "An Official Listing of Structures Warranting Special Concern for Preservation in Part or in Whole (as) Designated by the Commission."/8/ This list is also known as "Architecturally and/or Historically Significant Buildings in the Downtown" and consists generally of buildings rated "A" and "B" on the Heritage survey and "3" or higher on the DCP survey.

CONTRIBUTORY BUILDINGS

As part of its planning study, Guiding Downtown Development/9/, the Department of City Planning published a list of "Contributory Buildings" in July 1982. The DCP's definiton is as follows: "Contributory buildings" are part of a cluster of three or more buildings which are either significant buildings (i.e. buildings on the list adopted by the City Planning Commission) or C-Rated buildings. A "cluster" indicates buildings on the same lot, or on contiguous lots, or on lots which would be contiguous if they were not separated by a street. Cluster buildings can be viewed at street level as a group. These buildings are valued for their harmonious relationships with adjacent significant buildings. These relationships strengthen the overall urban fabric, and often provide the setting from which a significant architectural resource derives its importance.

DOWNTOWN PLAN

The Downtown Plan recognizes architectural resources in the C-3 District by assigning them to one of four "categories," I-IV. The Plan lists under its Categories I and II, 271 significant buildings which ..."cover all buildings rated 'A' by Heritage and most of the buildings rated 'B'." These "buildings (are of the highest architectural and environmental importance" and "are required to be retained."/10/

The Downtown Plan defines as contributory those "other buildigs contributing to the quality and character of downtown," and whose retention is "encouraged, but not required." These 222 contributory buildings are listed under Categories III and IV./10/

SUMMARY

A summary of all buildings in the C-3 District that are rated 'A', 'B' or 'C' in the Heritage Surveys, or '3', '4' or '5' in the DCP Survey is shown in Table E.3. The table lists by subarea, the block, lot number, name and address of each building; the Downtown Plan category, if any; its landmark status, Heritage rating (or DCP rating if not rated by Heritage), and notes concerning its status. The table does not include any buildings demolished before December 31, 1982. Figures E.1 through E.10, pp. E.40-E.49 provide reference maps for Table E.3. The figures show the locations of rated buildings within the C-3 Use District. Table E.4, p. E.50, shows the rated buildings in the C-3 District that were partially or totally demolished between 1978 and November 1982.

TABLE E.3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

NOTES FOR TABLE E.3:

This table includes all buildings in the C-3 District rated A, B or C by Heritage, or 3, 4 or 5 by DCP. The table is current as of December 1, 1982. Buildings demolished before December 1, 1982 are not included in Table E.3, but are included in Table E.4.

The number in this column indicates a building listed in the Downtown Plan to be significant (Categories I and II) or contributory (Categories III and IV).

Column Heading	Explanation
DP	The number in this column indicates a building listed in the Downtown Plan to be significant (Categories I and II) or contributory (Categories III and IV).
N&C	An "X" in this column indicates a building designated as a landmark in the National Register of Historic Places and/or a building designated as a City Landmark in the San Francisco Planning Code.
H	A letter in this column indicates the rating for a building listed in surveys by the Foundation for San Francisco's Architectural Heritage, 1979, and 1982.
*	A two-digit numerical code in the "H" column followed by an asterisk indicates a building rated "3" or higher in the San Francisco Department of City Planning Inventory of Buildings, but not rated in the Heritage surveys. The first number in the code indicates the overall architectural significance of the building; the second number is the summary rating for all factors rated.
(A)	Building is on site of a project under formal review by Department of City Planning (DCP).
(B)	Building is on site of a project approved for construction (but not under construction) by the City Planning Commission.
(C)	Partial interior demolition has been completed or is proposed.
(D)	Partial exterior demolition has been completed or is proposed.
(E)	Complete demolition is proposed.
(F)	Building is located in Yerba Buena Center Redevelopment Area.
(G)	Building is listed in "Architecturally and/or Historically Significant Buildings in the Downtown" approved by the City Planning Commission on May 29, 1980, Resolution No. 8600 (Total number of buildings: 263).

SOURCE: Roger Owen Boyer and Associates

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 1 (C-3-O: CENTRAL OFFICE SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
206	2	BURROUGHS BUILDING	447 BATTERY			B	<G>
206	5		418 CLAY			C	
206	6		432 CLAY			C	
207	35		545 SANSOME			C	
208	8	HOTEL JUSTICE	636-640 CLAY			C	
208	10	ROYAL HOTEL	662-672 CLAY			C	
208	11	HOTEL ANTWERP	700-708 KEARNY			C	
208	12	WOOD BUILDING	712-716 KEARNY			C	
226	4	EDWARD J. JORGENSEN	625 KEARNY			A	
226	5	JOSSELYN BUILDING	619-621 KEARNY			C	
226	6	WALLACE BUILDING	615-617 KEARNY			C	
226	7	LUNDSTROM HAT WORKS	605 KEARNY			C	
226	8		601 KEARNY			C	
226	9		706-712 SACRAMENTO			C	
226	10	CHEW BUILDING	716-722 SACRAMENTO			C	
226	26	SCHULTZ BLDG.	715 COMMERCIAL			C	
227	5		527 MONTGOMERY			C	
227	6		615-617 COMMERCIAL			C	
227	8	JOSSELYN BUILDING	616-618 SACRAMENTO			C	
227	9		624-628 SACRAMENTO			C	
227	10	MRS. KITTLE BLDG	630 SACRAMENTO			C	
227	11	MORGANTHALER LINO.	632-646 SACRAMENTO			C	
227	13	COBB BUILDING	648-656 SACRAMENTO			C	
227	14	BAUER & SCHWEITZER	658-662 SACRAMENTO			C	
227	15	JOSSELYN BUILDING	666-668 SACRAMENTO			C	
227	16	CHUY LUNG BAZAAR	672 SACRAMENTO			B	
227	17	THE CHINESE TIMES	686 SACRAMENTO			C	
227	18	RICH. W. MOLLER BLDG	688-690 SACRAMENTO			C	
227	20	SHIRLEY BLDG.	600 KEARNY			B	
227	21	TREADWELL BLDG.	610 KEARNY			C	
227	23	685 COMMERCIAL BLDG.	685 COMMERCIAL			B	
227	24	GISELMAN BLDG.	681 COMMERCIAL			B	
227	25		673-675 COMMERCIAL			C	
227	26	SOLOMON BUILDING	667-671 CLAY			C	
227	27	JAMES H. HJUL BLDG.	653-655 CLAY			C	
227	28	HEWITT BUILDING	627-629 CLAY			C	
227	29	OLD U.S. MINT	608 COMMERCIAL	1	X	A	<BCD>
227	33	E.W. FERGUSON HOTEL	678-692 CLAY			C	
227	34	MARTEL BUILDING	630-632 KEARNY			C	
227	35	TILLMAN HOTEL	638-648 KEARNY			C	
227	36		652-660 KEARNY			C	
227	37	THE CAMPUS BOOKSTORE	689 CLAY			C	
227	40		671-677 CLAY			C	
227	41	HANS KOEPKE BLDG.	667-669 CLAY			C	
227	42		661-665 CLAY			C	
227	43	WARBUR ESTATES CO.	651-659 CLAY			C	
227	44	ROSENBERG HOTEL	643-647 CLAY			C	
227	45		635-639 CLAY			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 1 (C-3-O: CENTRAL OFFICE SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
227	46	MERCANTILE TRUST CO.	631 CLAY			C	
227	47	YUM BLDG	619-625 CLAY			C	
228	2	FUGAZI BANK	415 SANSOME	4		B	(G)
228	3		407-411 SANSOME	4		C	
228	4	SUN BUILDING	401 SANSOME	4		C	<G>
228	6	P.G.&E. STATION J	222 LEIDESDORFF	4		B	<G>
228	9		558 SACRAMENTO	4		C	
228	10		560 SACRAMENTO	4		C	
228	11	PAOLI'S ANNEX	568 SACRAMENTO	1		B	<CG>
228	11	P.G.&E. STATION J	569 COMMERCIAL	1	X	A	<CG>
228	12		576 SACRAMENTO	4		C	
228	13	AMERICAN ASIAN BANK	500 MONTGOMERY	1		B	(G>
228	15	PAOLI'S	520 MONTGOMERY	1		B	<G>
228	22	ZOTT'S	554 COMMERCIAL	1		A	<G>
228	23	DON NUNZIO'S	564 COMMERCIAL	1		B	<G>
228	24		540-560 MONTGOMERY	4		C	
228	28	BANK OF AMERICA	552 MONTGOMERY	1	X	A	(G>
228	31		559-561 CLAY	4		C	
228	32		553-557 CLAY	4		C	
229	3	FEDERAL RESERVE BANK	400 SANSOME	1		B	<G>
235	5	LAWRENCE SYSTEMS	33 DRUMM	1		B	<G>
235	6		25-29 DRUMM			C	
235	8	ST. CLAIR BLDG.	16 CALIFORNIA			C	
235	9	MARVIN BUILDING	24 CALIFORNIA	2		B	<G>
235	18		119 SACRAMENTO			C	
235	19		37 DRUMM			C	
236	3		130-138 CALIFORNIA	4		C	
236	4		150 CALIFORNIA	4		C	
236	5	MARINE BUILDING	158 CALIFORNIA	1		B	<G>
236	6		222 FRONT	1		B	<G>
236	8		236 FRONT	4		C	
236	9		246 FRONT	4		C	
236	10		250-254 FRONT	4		C	
237	1	DE BERNARDI & CO.	251 FRONT	1		B	<G>
237	2		239 FRONT	4		C	
237	4		235-237 FRONT	4		C	
237	5		225-227 FRONT	4		C	
237	8	HIND BLDG	230 CALIFORNIA	2		B	
237	9	TADICH GRILL	240 CALIFORNIA	1	X	A	<G>
237	10	WELCH BUILDING	244 CALIFORNIA	2		B	<G>
237	11	NEWHALL BLDG	260 CALIFORNIA	1		A	<G>
237	18		333 SACRAMENTO	4		C	
237	19		325 SACRAMENTO	4		C	
238	1	EASTMAN KODAK BLDG.	241 BATTERY	3		B	<G>
239	2	SECURITY BUILDING	343 SANSOME	1		B	<G>
239	3	BANK OF CALIFORNIA	400 CALIFORNIA	1	X	A	
239	9	KOHL BUILDING	400 MONTGOMERY	1		B	<G>
239	12	A.BOREL & CO.	440 MONTGOMERY		X	A	<C>

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 1 (C-3-O: CENTRAL OFFICE SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CP	N&C	H	NOTES
239	14	ITALIAN AMERICAN BK.	460 MONTGOMERY		X	A	<C>
239	28		345 SANSOME			C	
240	2	KEMPER BUILDING	417 MONTGOMERY			C	
240	3	FINANCIAL CTR. BLDG.	405 MONTGOMERY	1		A	<G>
240	14	JACK'S RESTAURANT	615 SACRAMENTO	3	X	B	<G>
259	21	CALIF. COMMERCIAL U.	315 MONTGOMERY	1		A	<G>
260	2	FIREMAN'S FUND ANNEX	233 SANSOME	1		B	<G>
260	3	T.C. KIERULFF	231 SANSOME	1		B	<G>
260	4		217 SANSOME			C	
260	5	ROYAL GLOBE INS. CO.	201 SANSOME	1		A	<G>
260	6	ORIENT BUILDING	332 PINE	2		B	<G>
260	7	SEIBACH AND DEANS	340-344 PINE			C	
260	8	DIVIDEND BUILDING	348-354 PINE			C	
260	9	PHOENIX BUILDING	358-360 PINE			C	
260	10	OLD BANK OF AMERICA	300 MONTGOMERY	1		B	<G>
260	15	MERCHANTS EXCHANGE	465 CALIFORNIA	1		A	<G>
260	16	INSURANCE EXCHANGE	433 CALIFORNIA	1		A	<G>
261	1	ROBERT DOLLAR BLDG.	301 CALIFORNIA	1		B	<DG>
261	2	STANLEY DOLLAR BUILD	111-141 BATTERY			C	<E>
261	5	EXPOSITION BLDG	216 PINE			C	
261	7	AMERICAN INTERNAT'L	200 SANSOME	1		B	<G>
261	10	J.HAROLD DOLLAR BLDG	341 CALIFORNIA	1		B	<G>
266	6	POSTAL TELEGRAPH BDG	22 BATTERY	1		A	<G>
266	8	LEVI STRAUSS BLDG.	98 BATTERY	1		B	<G>
267	1	DONAHOE BLDG.	99 BATTERY	1		B	<G>
267	2		77 BATTERY			C	
267	4	SHELL BUILDING	100 BUSH	1		A	<G>
267	9	HEINEMAN BUILDING	130 BUSH	1		A	<G>
267	10	ADAM GRANT BUILDING	114 SANSOME	1		A	<G>
268	1	PAC. STOCK EXCHANGE	301 PINE	1		A	<G>
268	1A	STOCK EXCHANGE BLDG.	155 SANSOME			A	<G>
268	2	OLD STD. OIL BLDG.	200 BUSH	1		A	<G>
268	6	MILLS BLDG(INCL.7,8)	220 MONTGOMERY	1	X	A	
268	12	EXCHANGE BLOCK BLDG.	369 PINE			C	
268	16	OLD CHMBR OF COMMRC.	333 PINE	1		B	<G>
268	17	INECON BUILDING	240 MONTGOMERY			C	
268	18		248-250 MONTGOMERY			C	
268	19	BARNESON BUILDING	256 MONTGOMERY			C	
269	1	RUSS BLDG	235 MONTGOMERY	1		A	<G>
269	3	S.F. MINING EXCHANGE	350 BUSH	1	X	A	<AG>
269	4	SAM'S GRILL	364 BUSH	4		C	
269	5	SHASTA HOTEL	380 BUSH	4		C	
269	7		334 KEARNY	4		C	
269	9	HARRIGAN/WEIDENMULLE	344 KEARNY	1		B	<G>
269	10		346 KEARNY	1		B	<G>
269	11		358 KEARNY	4		C	
269	12		362 KEARNY	1		B	<G>
269	14		28 BELDEN	4		C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 1 (C-3-O: CENTRAL OFFICE SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CP	N&C	H	NOTES
269	15		40 BELDEN	4		C	
269	18		52 BELDEN	4		C	
269	20		485 PINE			C	
269	21	SAROYAN BUILDING	471-475 PINE			C	
269	22	TEMPLE HOTEL	469 PINE			C	
269	24	DUFFY'S/GRAZIANO'S	453 PINE			C	
269	26	MCDONALD'S	445 PINE			C	
270	1	KEARNY-PINE BLDG.	353-359 KEARNY	4		C	
270	2	MACDONOUGH BLDG.	333 KEARNY ST.	1		B	<G>
270	3		325-329 KEARNY	4		C	
270	5		315 KEARNY	4		C	
287	1	SCHMIDT BUILDING	251 KEARNY	1		B	<G>
287	2	MCKAY BUILDING	243 KEARNY	4		C	
287	3		237-241 KEARNY	4		C	
287	4		227-231 KEARNY	4		C	
287	5		219-225 KEARNY	4		C	
287	6		215-217 KEARNY	4		C	
287	7		209 KEARNY	4		C	
287	8		201 KEARNY ST.	1		B	<G>
287	22		429-431 BUSH	4		C	
287	23		415 BUSH	4		C	
288	1	ALEXANDER BUILDING	149-157 MONTGOMERY	1		B	<G>
288	6	CALIFORNIA PACIFIC	105 MONTGOMERY			B	<CG>
288	7	FRENCH BANK	108 SUTTER	1		A	<G>
288	8		126 SUTTER			C	
288	10	CENTRAL REALTY	154 SUTTER	2		B	<AG>
288	11		200 KEARNY	1		A	<AG>
288	14	MARSTON BLDG	240 KEARNY	4		B	<G>
288	16		260 KEARNY	4		C	
288	17	J.E.ADAMS BUILDING	381 BUSH	1		B	<G>
288	21		351 BUSH ST.			B	<AG>
288	25	HOTEL STANFORD	246-250 KEARNY	4		C	
288	27	HALLIDIE BUILDING	130 SUTTER	1	X	A	
288	29	ROBINS BUILDING	220-226 KEARNY	4		C	<A>
289	1	STANDARD OIL BLDG.	225 BUSH	1		B	<G>
289	3	ANGLO/LNDN/PARIS BNK	1 SANSOME			A	<CG>
289	6	FRENCH BANK OF CAL.	130 MONTGOMERY	1		B	<G>
291	1	FLATIRON BUILDING	540 MARKET	1	X	A	<G>
291	2		550 MARKET			C	
291	3		554 MARKET			C	
291	4	PATRICK & COMPANY	560 MARKET			B	<G>
291	5	CHANCERY BUILDING	562 MARKET	1		B	<G>
291	5B	FINANCE BUILDING	576 MARKET	1		B	<G>
291	6	HOBART BUILDING	582 MARKET	1		A	<G>
292	1	HUNTER-DULIN BLDG.	111 SUTTER	1		A	<G>
292	1A	CROCKER BANK	1-25 MONTGOMERY			A	<CDG>
292	9	SUTTER HOTEL	171 SUTTER	4		C	
293	1	ARGONAUT BUILDING	161 KEARNY	1		B	<G>

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 1 (C-3-O: CENTRAL OFFICE SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
293	2	BARTLETT/DOE BLDG	153 KEARNY	1		B	<G>
293	3	YOUNG BUILDING	123 KEARNY	2		B	<G>
310	2	ROULLIER BUILDING	49 KEARNY	1		B	<G>
310	3	OSCAR LUNING BLDG	47 KEARNY	1		B	<G>
310	4	BALDWIN BUILDING	25 KEARNY	1		B	<G>
310	5	SCHMIDT BUILDING	10 GEARY	1		B	<G>
310	6	FIDELITY BUILDING	2 GEARY	1		B	<G>
310	22	O'CONNOR/MOFFAT BLDG	117 POST	1		B	<G>
311	5		660 MARKET	3		B	<G>
311	8	MASKEY BUILDING	46 KEARNY			B	<EG>
311	10	BULLOCK & JONES BLDG	60 KEARNY			B	<EG>
311	11	FEDERAL SAVINGS BLDG	79 POST			C	<E>
311	13	MECHANICS INSTITUTE	57 POST	1	X	A	<G>
312	10	CITIZEN'S SAVINGS	704 MARKET	1		A	<G>
3707	1	SANTA FE BUILDING	601 MARKET	4		B	<G>
3707	2A		609-611 MARKET	4		C	
3707	2	SCHWABACHER BLDG	20 SECOND ST	4		B	<G>
3707	3		30 SECOND ST			C	
3707	4	MORGAN BLDG	36-40 SECOND	4		C	
3707	5		42-46 SECOND	4		C	
3707	6	KENTFIELD & ESSER	48-50 SECOND	4		C	
3707	7		52-54 SECOND	4		C	
3707	8		60-64 SECOND	4		C	
3707	9		70-72 SECOND	4		C	
3707	10		76 SECOND	4		C	
3707	11		84-88 SECOND	4		C	
3707	12		90-96 SECOND	4		C	
3707	13	ATLAS BLDG.	602-606 MISSION	4		C	
3707	14	CROSSLEY BUILDING	79 NEW MONTGOMERY	4		C	
3707	19		652-654 MISSION			C	
3707	20	GRAPHICS BUILDING	662 MISSION			C	<G>
3707	21		666 MISSION			C	
3707	22	GALLATIN BLDG	674-676 MISSION			C	
3707	25	GRACE BLDG	87-97 THIRD			C	
3707	28		81-85 THIRD			C	
3707	29	BREEN'S	71-77 THIRD ST.			B	<FG>
3707	31	HOTEL JESSIE	167-179 JESSIE			C	(F)
3707	32	HESS BLDG	163-165 JESSIE			C	(F)
3707	33	CALL BUILDING	74 NEW MONTGOMERY	1		A	<G>
3707	35	SHARON BUILDING	55 NEW MONTGOMERY	1		A	<G>
3707	44	PALACE GARAGE	111 STEVENSON	1		B	<G>
3707	45	ATLAS BLDG	602-606 MISSON			C	
3707	51	MONADNOCK BUILDING	673-687 MARKET	1		B	<G>
3707	52	PALACE HOTEL	633-665 MARKET	2	X	A	<G>
3707	54		621 MARKET	4		C	<A>
3707	55	HOFFMAN GRILL	619 MARKET	1	X	B	<AG>
3707	56		613-615 MARKET	4		C	<A>
3707	57	EXAMINER BUILDING	691 MARKET	1		B	<AG>

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 1 (C-3-O: CENTRAL OFFICE SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3707	57		17-29 THIRD			C	
3707	59	METROPOLIS TRUST	623-631 MARKET	1		B	<AG>
3707	59		17-29 N MONTGOMERY	4		C	
3708	3		38-40 FIRST			C	
3708	6	NEUSTADTER BROS BLDG	62 FIRST			C	
3708	7	MARWEDEL BLDG	76-80 FIRST			C	
3708	8		82-84 FIRST			C	
3708	9	BRANDENSTEIN BLDG	500-506 MISSION			C	
3708	11	PRINTING ARTS BLDG	516-520 MISSION			C	
3708	12	WESTERN PACIFIC RR	526 MISSION			C	
3708	13	GOLDEN GATE U.	532-536 MISSION			C	
3708	15	DAZIEL BLDG	554-560 MISSION			C	
3708	17	CHANCERY BUILDING	562 MISSION			B	<AEG>
3708	19	WELLS FARGO	71 SECOND ST.	1		A	<G>
3708	20		57 JESSIE			C	
3708	22	ONE ECKER	16 JESSIE	1		B	<G>
3708	23		40-48 JESSIE			C	
3708	28	STEVENSON GARAGE	71 STEVENSON			C	
3708	29		64 JESSIE			B	<G>
3708	31	MUNI RR SUBSTATION	77 STEVENSON			C	
3708	32		96 JESSIE			C	
3708	33	WENTWORTH-SMITH BLDG	39-47 SECOND	4		C	
3708	34	CALIFORNIA FARMER	83 STEVENSON	3		B	<G>
3708	38	STANDARD VARNISH	55 STEVENSON			C	
3708	39		53 STEVENSON			C	
3708	40		39-49 STEVENSON			C	
3709	8	TERMINAL PLAZA	440 MISSION			B	
3709	11	BLAKE,MOFFIT & TOWNE	41 FIRST			B	<EG>
3709	12	SHELDON BUILDING	9 FIRST ST.			B	<EG>
3711	14A	P.G. & E.	245 MARKET	1		A	<G>
3711	18	MATSON BUILDING	215 MARKET	1		A	<G>
3713	6	SOUTHERN PACIFIC	1 MARKET	1		A	<G>
3715	1	AUDIFFRED BLDG.	1 MISSION	1	X	A	
3715	2		110-116 EMBARCADERO			C	
3715	4	HARBOR HOTEL	128-132 EMBARCADERO			C	
3715	5	HIHN/MEYER BUILDING	137-143 STEUART			C	
3715	6	LINCOLN HOTEL, ETC.	144-146 EMBARCADERO			C	
3715	7	ARMY-NAVY YMCA	166 EMBARCADERO	1		A	
3716	1	RINCON ANNEX POST OF	55 MISSION		X	A	
3717	2	GEO. E. BILLINGS	124-134 SPEAR			C	
3717	13	MCCARTHY BLDG	115 MAIN			C	
3717	14		199 MISSION			C	
3719	1	W.P. FULLER & CO.	301 MISSION	1		B	
3721	2	O'BRIEN BROS BLDG	110 FIRST			C	
3721	4	BONESTELL BLDG	116 FIRST			C	
3721	5		118-124 FIRST			C	
3721	47	FORD BUILDING	90 NATOMA			C	
3721	48	MARCUS MODRY BLDG.	163 SECOND	4		C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 1 (C-3-O: CENTRAL OFFICE SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3721	49	BOTHIN REAL ESTATE	149-157 SECOND	4		C	
3721	50	BARKER, KNICKERBOCKER	141 SECOND ST.	1		B	
3721	51	MORTON L. COOK BLDG.	133 SECOND	4		C	
3721	52	JOHN G. RAFF CO.	83 MINNA			C	
3721	68	GOODYEAR BLDG	535-539 MISSION			C	
3721	70		571-573 MISSION			C	
3721	71	RAFF BLDG.	121 SECOND	1		B	
3721	73		589-591 MISSION			C	
3721	74	STOLL & SONNIKSEN	583-585 MISSION			C	
3721	75		575-579 MISSION			C	
3721	78		565-567 MISSION			C	
3721	80		553 MISSION			C	
3721	81		549 MISSION			B	<G>
3721	82		545 MISSION			C	
3721	87		511-519 MISSION			C	
3722	1	STEVENSON BLDG	609 MISSION	4		C	
3722	2		120-130 SECOND	4		C	
3722	3	MORTON L. COOK BLDG.	132 SECOND ST.	1		B	
3722	4	BOTHIN REAL ESTATE	144-154 SECOND	4		C	<B>
3722	5	THE JACKSON BLDG.	156-160 SECOND	4		C	
3722	6	N CLARK & SONS (PKG)	116 NATOMA	1		B	
3722	7		137-159 N MONTGY	4		C	
3722	8	PACIFIC TELEPHONE	134-140 N. MONTGY	1		A	<G>
3722	63	WILLIAMS BUILDING	101 THIRD STREET			B	<FG>
3722	67	GRANT BLDG	663-671 MISSION			C	
3722	68	MCLAUGHLIN BLDG	657 MISSION			C	
3722	69	VERONICA BUILDING	647-649 MISSION			C	
3722	70		641-643 MISSION			C	
3722	71	RIALTO BUILDING	116 NEW MONTGOMERY	1		A	<G>
3722	72	STANDARD BUILDING	111-121 N MONTGY	4		C	
3722	73	KORACORP BUILDING	617-623 MISSION	4		C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 2 (EAST C-3-S: EAST SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CP	N&C	H	NOTES
3715	8		179-187 STEUART			C	
3719	7	EASTWOOD GARAGE	324-326 HOWARD			C	
3719	8	MCINTOSH & WOLFMAN	342 HOWARD	1		B	
3719	11	EMILY CHABOT WAREHSE	177-181 FREMONT			C	
3720	7		167-199 FIRST ST.			C	
3721	11	PRINTING ARTS	500 HOWARD	1		B	
3721	13	CA.BOILER WKS./GAR.	522-528 HOWARD	3		B	
3721	14	BOTHIN REAL ESTATE	530-532 HOWARD			C	
3721	15	FED.SECURITY CO.BLDG	540 HOWARD			C	
3721	16		546 HOWARD			C	
3721	19		562-564 HOWARD			C	
3721	20	F.C. JANSSEN BLDG.	568 HOWARD	3		B	
3721	21	DAHL-BECK ELEC. CO.	580-586 HOWARD			C	
3721	22	DOWNEY BLDG.	590-594 HOWARD			C	
3721	25	ELECTRICAL BLDG.	165 SECOND	4		B	
3721	27A		83 NATOMA			C	
3721	28		81 NATOMA			C	
3721	29	JOHN V OFFEL BLDG.	77-79 NATOMA			C	
3721	35	BOTHIN REAL ESTATE	39 NATOMA			C	
3721	88	MCELROY BLDG.	35-37 NATOMA			C	
3722	11	EMERSON MFG. CO.	161 NATOMA			C	
3722	12	BOSTON RUBBER SHOE	658 HOWARD			C	
3722	13	UNDERWRITER'S	147 NATOMA	1		B	<G>
3722	14		145 NATOMA			23*	<G>
3722	16		168-170 SECOND	4		C	
3722	19	BARKER,K,& B BLDG.	182-198 SECOND	4		C	
3722	20	MERRITT BLDG.	606-612 HOWARD			C	
3722	22	FURNITURE EXCHANGE	170-180 N MONTGY	4		C	
3722	27	HEMPHILL BLDG.	666-672 HOWARD			C	
3735	4	HOLABIRD BLDG.	611 HOWARD			C	
3735	5	WM. VOLKER BLDG.	631 HOWARD	4		C	<G>
3735	8	PLANTERS HOTEL	286-298 SECOND ST.			C	
3735	9	LOUIE LURIE BLDG.	608 FOLSOM			C	
3735	10	COLLINS-HENCKE CORP.	610-622 FOLSOM			C	
3735	39	SHARON ESTATE CO.	667 HOWARD	3		B	
3735	41	S.F. NEWS CO.	657 HOWARD	1		B	<G>
3735	42		651 HOWARD			C	
3735	47	R.W.KINNEY CO. BLDG.	645 HOWARD			C	
3736	1		501-507 HOWARD			C	
3736	3A		206-212 FIRST ST.			C	
3736	4		220-228 FIRST ST.			C	
3736	6	PHILLIPS BLDG.	234 FIRST	1		A	
3736	16	S.F. WELDING & FAB.	31 CLEMENTINA			C	
3736	17	GEORGE W. CASWELL CO	530 FOLSOM	3		B	
3736	24		568 FOLSOM			C	
3736	25	J.E. BIER BLDG.	572 FOLSOM	3		B	
3736	27	BOTHIN REALTY CO.	580-590 FOLSOM			C	
3736	29		596 FOLSOM			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 2 (EAST C-3-S: EAST SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3736	36		69 CLEMENTINA			C	
3736	60		64-66 CLEMENTINA			C	
3736	67	MARK LALLY CO.	235-247 SECOND ST.			C	
3736	78		19 TEHAMA			C	
3736	83	MARTIN BLDG.	527-529 HOWARD			C	
3736	86	AARON KAHN WAREHSE.	553-555 HOWARD			C	
3736	91	BRIZARD & YOUNG	72 TEHAMA	3		B	
3736	92		74 TEHAMA			C	
3736	93		78-80 TEHAMA			C	
3736	94		90 TEHAMA			C	
3736	95	RBT. MCMILLAN BLDG.	217 SECOND ST.			C	
3736	96	H. E. BOTHIN BLDG.	205-215 SECOND ST.			C	
3736	98	LENT BLDG.	589-591 HOWARD			C	
3736	99	CRELLIN ESTATE CO.	583 HOWARD			C	
3736	100	TAYLOR BLDG.	577-579 HOWARD			C	
3736	102	E.J.BROOKS & CO.	571 HOWARD			C	
3736	107		557 HOWARD			C	
3736	110	GREELEY BLDG.	547-549 HOWARD			C	
3736	111		543 HOWARD			C	
3736	112	MERCEDES CO. BLDG.	531-533 HOWARD			C	
3736	114	LOUIS LURIE BLDG.	525 HOWARD			C	
3736	116	PHILLIPS VAN ORDEN	511-521 HOWARD			C	
3737	12	THOMSEN MACHINE WKS.	407 HOWARD			C	
3737	1	H.N.COOK BELTING CO.	401 HOWARD			C	
3737	2	PHILADELPHIA STOR.CO	218 FREMONT			C	
3737	3	B.C.VAN EMON ELEV.	224 FREMONT			C	
3737	4		244 FREMONT			C	
3737	22		237 FIRST ST.			C	
3737	23		231 FIRST	1		B	
3738	2	BUTLER BLDG.	215 FREMONT			C	
3740	1	FOLGER COFFEE CO. BL	101 HOWARD	1		A	
3741	21	SEAMEN'S INSTITUTE	240-242 STEUART			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 3 (WEST C-3-S: CENTRAL SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3509	2	MOHR BROS.BLDG.	116 NINTH ST.			C	
3509	3	THE LEADER PUB. CO.	122 NINTH ST.			C	
3509	5		140-146 NINTH ST.			C	
3509	7	MCELROY HOTEL	150-160 NINTH ST.			C	
3509	8		190 NINTH ST.			C	
3509	8A	L.A. MYERS BLDG.	170-174 NINTH ST.			C	
3518	1		1301-1315 HOWARD			C	
3518	2		220 NINTH ST.			C	
3518	3		228-230 NINTH ST.			C	
3518	4	GIACOBBI & SONS BLDG	234-240 NINTH ST.			C	
3518	5		244 NINTH ST.			C	
3518	6,7		248-252 NINTH ST.			C	
3518	8		258 NINTH ST.			C	
3518	11		272-274 NINTH ST.			C	
3518	33	AUTO. HOME LAUNDRY	45 DORE			C	
3518	35		1325-1331 HOWARD			C	
3724	68	PACIFIC GRAVUE CO.	325-329 MINNA			C	<B>
3725	6	ZIHN BLDG.	190 FIFTH ST.			C	
3725	7	FRANCIS VALENTINE CO	705-721 NATOMA			C	
3725	7	HOTEL GEORGE	194-198 FIFTH ST.			C	
3725	8		910 HOWARD			C	
3725	9	SWEET BLDG.	912 HOWARD			C	
3725	12	TEGELER BLDG.	924-926 HOWARD			C	
3725	14		934 HOWARD			C	
3725	15	LOUIE LURIE BLDG.	938 HOWARD			C	
3725	15	GEO. ZETT BLDG.	944-946 HOWARD			C	
3725	17		948-950 HOWARD			C	
3725	18	MYERS BLDG.	952-954 HOWARD			C	
3725	19		956-960 HOWARD			C	
3725	20	AFTON HOUSE	964 HOWARD			C	
3725	23	STERLING FURNITURE	974 HOWARD			C	
3725	24	STERLING FURNITURE	978-986 HOWARD			C	
3725	25	PLAZA HOTEL	988-998 HOWARD			C	
3725	26	ALTON/ALDER HOTELS	169-183 SIXTH ST.			C	
3725	31	R.BROWN BLDG.	445 NATOMA			C	
3725	33		70 MARY ST.			C	
3725	35		82 MARY ST.			C	
3725	42	CAMELLINE BLDG.	430 NATOMA			C	
3725	45	BOSWORTH BLDG.	50 MARY ST.			C	
3725	46		432-438 NATOMA			C	
3725	47	FOSTER & OREAR	440 NATOMA			C	
3725	49	GALE BLDG.	444-458 NATOMA			C	
3725	51		454-458 NATOMA			C	
3725	60	PASQUALETTI BLDG.	494-498 NATOMA			C	
3725	61	ABERDEEN/TAJ HOTELS	157-161 SIXTH ST.			C	
3725	62		151-155 SIXTH ST.			C	
3725	63	HOTEL MINALEE	139-149 SIXTH ST.			C	
3725	64	SUNNYSIDE HOTEL	133-135 SIXTH ST.			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 3 (WEST C-3-S: CENTRAL SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3725	66	HOTEL AUBURN	481 MINNA			C	
3725	74		455 MINNA			C	
3725	75		453 MINNA			C	
3725	76	DANNER PRINTING CO.	447-449 MINNA	1		B	
3725	79	HOTEL ROSE	117-131 SIXTH ST.			C	
3725	81	SCHMOLL BLDG.	101-115 SIXTH ST.			C	
3725	82	J.S.MORGAN & SONS	987-991 MISSION			C	
3725	87	CALIF. CASKET CO.	959 MISSION	1		A	
3725	88		951-957 MISSION			C	
3725	89	LOUIS LURIE BLDG	947-949 MISSION			C	
3725	90		941-945 MISSION			C	
3725	93	CHRONICLE BLDG.	901-933 MISSION			C	
3726	1		100-102 SIXTH	1		B	
3726	2	HOTEL HENRY	106-112 SIXTH	1		B	
3726	3	MITCHELL BLDG.	118-120 SIXTH ST.			C	
3726	12	HARBAND BLDG.	1014-1016 HOWARD			C	
3726	18	IDA GOLDBLATT APTS.	1040-1042 HOWARD			C	
3726	20	EGYPTIAN LACQUER BLD	1050 HOWARD			C	
3726	22	HARBAND BLDG.	1058-1062 HOWARD			C	
3726	24	LLOYD BLDG.	1064-1066 HOWARD			C	
3726	25	MATHAT BLDG.	1068-1070 HOWARD			C	
3726	26	MUELLER MFG. CO.	1072-1076 HOWARD			C	
3726	29		1084-1086 HOWARD			C	
3726	30		1088 HOWARD			C	
3726	32	ROTHESAY APTS.	195 SEVENTH ST.			C	
3726	35		169 SEVENTH ST.			C	
3726	47		537-541 NATOMA			C	
3726	76	GRIFFEN BLDG.	576 NATOMA			C	
3726	105	GRAND SOUTHERN HOTEL	101-109 SEVENTH ST.			C	
3726	106	LURIE & HEMPHILL BLD	1087-1089 MISSION			C	
3726	107	COLEMAN BLDG.	1083-1085 MISSION			C	
3726	108		1077-1081 MISSION			C	
3726	110	NUELAN GARAGE	1023 MISSION			C	
3726	111		1019 MISSION			C	
3727	1	HOTEL GORDON	100-120 SEVENTH			C	
3727	4		150-154 SEVENTH ST.			C	
3727	5		160 SEVENTH ST.			C	
3727	8	CARLSON BLDG.	1108-1110 HOWARD			C	
3727	10	STERSHER BLDG.	1114 HOWARD			C	
3727	12	JOHNSON BLDG.	1122 HOWARD			C	
3727	14		1126 HOWARD	2		B	
3727	16		1136-1140 HOWARD			C	
3727	18	HARMS BLDG.	1142 HOWARD			C	
3727	22,2	WAKELEE'S PHARM.WHSE	1150-1158 HOWARD			C	
3727	24	DANNEMARK BLDG.	1160-1162 HOWARD			C	
3727	26	BOTHIN REAL ESTATE	1166-1198 HOWARD			C	
3727	48		626-628 NATOMA			C	
3727	61	GEORGE H. TAY CO.	165 EIGHTH ST.			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 3 (WEST C-3-S: CENTRAL SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CP	N&C	H	NOTES
3727	63		143-147 EIGHTH			C	
3727	65		683 MINNA			C	
3727	72	SHULER FLATS	653-655 MINNA			C	
3727	77	F.L. HANSEN BLDG.	637 MINNA			C	
3727	78		635 MINNA			C	
3727	91,3	HESS GARAGE	1125-1127 MISSION			C	
3727	94	LURIE CO. BLDG.	1131 MISSION			C	
3727	96	KNIGHTS/RED BRANCH	1133-1137 MISSION			C	
3727	101	DR.C.BAUER BLDG.	1151-1153 MISSION			C	
3727	102	MCLAUGHLIN EST. CO.	1155-1159 MISSION			C	
3727	103	UNITED HOLDING CO.	1161-1163 MISSION			C	
3727	113	F.M.HARE & SONS APTS	135-139 EIGHTH			C	
3727	118	GOETZ BLDG.	1183-1185 MISSION			C	
3727	120	GODEAU BLDG.	1167-1169 MISSION			C	
3727	125		1145-1149 MISSION			C	
3727	130	GREYHOUND PACKAGE EX	1119-1121			C	
3727	135	PG&E SUBSTATION I	111-117 EIGHTH			C	
3728	2	BUZZEL BLDG.	120-132 EIGHTH	1		B	
3728	5	MYERS BLDG.	150-154 EIGHTH			C	
3728	8		1202-1204 HOWARD			C	
3728	11		1220 HOWARD			C	
3728	14	GUILFOY CORNICE WKS.	1234 HOWARD	3		B	
3728	17	R.H.J.FORBES BLDG.	1246 HOWARD			C	
3728	18	WALTER C.FALCH BLDG.	1252-1256 HOWARD			C	
3728	26	HANSEN BLDG.	757-759 NATOMA			C	
3728	29		741 NATOMA			C	
3728	32		727-731 NATOMA			C	
3728	35	REICHEL ENG. CO.	718-720 NATOMA			C	
3728	38		732-734 NATOMA			C	
3728	39		736-738 NATOMA			C	
3728	43		758 NATOMA			C	
3728	45	SPRINGER FLATS	770 NATOMA			C	
3728	48		149 NINTH ST.	1		B	
3728	49		145 NINTH ST.			C	
3728	53		761-763 MINNA			C	
3728	54		757-759			C	
3728	55		753-755 MINNA			C	
3728	56	JULIA DUNN RESIDENCE	747-751 MINNA			C	
3728	57		743-745 MINNA			C	
3728	59		733-735 MINNA			C	
3728	60		727-731 MINNA			C	
3728	61		723-725 MINNA			C	
3728	69	J.C.CORP. BLDG.	121-131 NINTH ST.			C	
3728	75		1271-1275 MISSION			C	
3728	76	HERMAN R. KLENCK BLD	1263-1267 MISSION			C	
3728	89		1235 MISSION	2		A	(G)
3729	2	GOLDEN STATE BAKING	1207-1223 HOWARD			C	
3729	5	DR.F.C.KECK BLDG.	246-260 EIGHTH ST.			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 3 (WEST C-3-S: CENTRAL SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3729	42		716-718 CLEMENTINA			C	
3729	45		730-732 CLEMENTINA			C	
3729	46		736 CLEMENTINA			C	
3729	53A	MURPHY FLATS	770-772 CLEMENTINA			C	
3729	53		766-768 CLEMENTINA			C	
3729	55		782-784 CLEMENTINA			C	
3729	56	WAREHOUSE UNION	255-261 NINTH ST.			C	
3729	57	LACEY/NORMANDY HOTEL	249-251 NINTH ST.			C	
3729	58	CLOISTER PRESS	235-239 NINTH ST.			C	
3729	59	MCLENEGAN BLDG.	231-235 NINTH ST.			C	
3729	65		737-739 TEHAMA			C	
3729	67		725 TEHAMA			C	
3729	73		720-750 TEHAMA			C	
3729	78	MRS MATTIE BOYD APTS	227-229 NINTH ST.			C	
3729	79		223-225 NINTH ST.			C	
3729	80		219-221 NINTH ST.			C	
3729	81	GIACOBBI & SONS BLDG	207-211 NINTH ST.			C	
3729	82	PHILLIPS HOTEL	201 NINTH ST.	1		B	
3729	83		1283-1287 HOWARD			C	
3729	86		1245-1261 HOWARD			C	
3729	87		1237-1239 HOWARD			C	
3729	88	WHELAN FRENCH BAKERY	1233-1235 HOWARD			C	
3729	90		761 TEHAMA			C	
3730	3	DANNER PUBLISHING CO	224 SEVENTH ST.			C	
3730	4	H.E.& F.W. HOLMES	230-234 SEVENTH			C	
3730	8	MYERS BLDG.	268-270 SEVENTH			C	
3730	10		282-284 SEVENTH			C	
3730	32	CA PRINTING CO.	255-268 EIGHTH ST.			C	
3730	34		243-245 EIGHTH ST.			C	
3730	38	SNYDER BROS.KNT'G ML	201 EIGHTH ST.			C	
3730	39		1181-1185 HOWARD			C	
3730	40	SCHALLA BLDG.	1159-1169 HOWARD			C	
3730	59	SAMUEL SCHELL BLDG.	1173-1175 HOWARD			C	
3730	60		1159 HOWARD			C	
3730	61	COLEMAN APARTMENTS	1155 HOWARD			C	<G>
3730	70		60 RAUSCH			C	
3730	72		64 RAUSCH			C	
3730	82	AUSTIN DRAYING CO.	45 RAUSCH			C	
3730	88	HOELSCHER & ROSENBLM	1145-1149 HOWARD			C	
3730	89	PALADINI BLDG.	1141 HOWARD			C	
3730	100		52-56 LANGTON			C	
3730	101		58-62 LANGTON			C	
3730	102		64-70 LANGTON			C	
3730	104-5	PACIFIC MILLING CO.	74-84 LANGTON			C	
3730	108		73-77 LANGTON			C	
3730	117	CALIF. WOOD CARVING	1117 HOWARD			C	
3731	31	MYERS BLDG.	273-285 SEVENTH			C	
3731	40	JOHNSON BLDG.	225 SEVENTH ST.			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 3 (WEST C-3-S: CENTRAL SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CP	N&C	H	NOTES
3731	41		219-221 SEVENTH ST.			C	
3731	42	BLINDCRAFT BLDG.	1097 HOWARD	3		B	
3731	43	E.V.LACEY BLDG	1077 HOWARD			C	
3731	55		76 MOSS			C	
3731	71	ROSENBLUM & H. BLDG.	1069-1073 HOWARD			C	
3731	72		1061-1063 HOWARD			C	
3731	73		1055-1059 HOWARD			C	
3731	74		1049 HOWARD	1		B	
3731	76		112-114 RUSS ST.			C	
3731	77		120-126 RUSS			C	
3731	78	HJUL BLDG.	128-130 RUSS			C	
3731	79		132-134 RUSS			C	
3731	82	J.ROACH APTS.	146-150 RUSS			C	
3731	83	CONNER BLDG.	152-156 RUSS			C	
3731	84	HJUL BLDG.	160-164 RUSS			C	
3731	86	ETHEL ELVIN BLDG.	170 RUSS			C	
3731	88	SOCKDOV APTS.	179-181 RUSS			C	
3731	89	NISHKIAN BLDG.	169-175 RUSS			C	
3731	91	MARKS BLDG.	159-165 RUSS			C	
3731	93	EMANUEL APTS.	151-153 RUSS			C	
3731	94		1035 HOWARD	2		B	
3731	99		34-40 HARRIET			C	
3731	104	EMANUEL FLATS	58-60 HARRIET			C	
3731	105		62-64 HARRIET			C	
3731	109		80-82 HARRIET			C	
3731	110		84-88 HARRIET			C	
3731	124	STERNSHER BLDG.	90 MOSS			C	
3732	8		252-260 FIFTH ST.			C	
3732	62	BEMISS WAREHOUSE	436-438 CLEMENTINA			C	
3732	64	HOGBERG BLDG.	444 CLEMENTINA			C	
3732	66	CASHEL BLDG.	450 CLEMENTINA			C	
3732	71	LAWSON & DRUCKER	465 TEHAMA			C	
3732	78	HOTEL ANGLO	237-245 SIXTH ST.			C	
3732	79		485-487 TEHAMA			C	
3732	80	NASON BLDG.	481-483 TEHAMA			C	
3732	81	W.H.RADBRUCH ENAMEL	479 TEHAMA			C	
3732	84		473 TEHAMA			C	
3732	88		451-453 TEHAMA			C	
3732	89		445-449 TEHAMA			C	
3732	90		443 TEHHAMA			C	
3732	90A	SILVERSTONE FLATS	439-441 TEHAMA			C	
3732	91	HOGAN APTS.	435-437 TEHAMA			C	
3732	94	MEYERS SAFETY SWITCH	419 TEHAMA			C	
3732	96		415-417 TEHAMA			C	
3732	97	CAZARES FLATS	409-413 TEHAMA			C	
3732	100	SULLIVAN BLDG.	921-923 HOWARD			C	
3732	102		422 TEHAMA			C	
3732	103	PINKERTON CO. BLDG.	927-931 HOWARD			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 3 (WEST C-3-S: CENTRAL SOUTH OF MARKET SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CP	N&C	H	NOTES
3732	108		442 TEHAMA			C	
3732	110	LOUIE LURIE BLDG.	951-957 HOWARD			C	
3732	112		965 HOWARD			C	
3732	114		971 HOWARD			C	
3732	116		971 HOWARD			C	
3732	123	HOTEL STAR/ROYAL HTL	219-221 SIXTH ST.			C	
3732	124	ORLANDO HOTEL	201 SIXTH ST.	1		B	
3732	127	SCHIFF BLDG.	985-987 HOWARD			C	
3732	129	KNOWLES BLDG.	977 HOWARD			C	
3732	130	E. A. BOZIO BLDG.	973-975 HOWARD			C	
3732	138	STELLING BLDG.	939-941 HOWARD			C	
3732	139		937 HOWARD			C	
3732	140		933-935 HOWARD			C	
3732	143	WHITE BLDG.	925 HOWARD			C	
3732	145A	HOWARD REALTY CO.	911-917 HOWARD			C	
3733	58	FIELD-ERNST ENVELOPE	245 FIFTH ST.	2		B	
3733	60A		355 TEHAMA			C	
3733	60	SPAULDING P.C.B.WKS.	357-361 TEHAMA			C	
3733	79	P.G.&E. GARAGE	875-899 HOWARD			C	
3733	80	PAHL BLDG.	855-859 HOWARD			C	
3733	81		849-853 HOWARD			C	
3733	82	SOLOMON BLDG.	843-847 HOWARD			C	
3733	83	SULLIVAN BLDG.	839-841 HOWARD			C	
3733	84	HOME TELEPHONE CO.	835-837 HOWARD	2		A	
3733	88	MACGRUER & SIMPSON	819-823 HOWARD			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 4 (SOUTH C-3-G: SOUTH VAN NESS SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
811	16	S.F.ART COMM GALLERY	155 GROVE			C	
814	2	CLYDE PAYNE APTS.	55 POLK			C	
814	8	ARBURUA & MCINNIS	26-36 FELL ST.			C	
814	10	VIAVI BLDG.	42 FELL	3		B	
834	3	GODEAU UNDERTAKERS	41 VAN NESS	1		B	
834	4	MASONIC TEMPLE	11-35 VAN NESS	1		A	<G>
834	5	YOUNG MEN'S INST	50 OAK STREET	2		A	<G>
834	7	YOUNG MEN'S INST	70 OAK			C	
834	12	WHITESIDE APTS.	150 FRANKLIN	1		B	
834	13	OAK HOTEL	171 FELL			C	
834	14	S.A.WEINSTOCK BLDG.	165-167 FELL			C	
834	15	GINGG & BALCOME BLDG	159-163 FELL			C	
834	18	ST. CECIL HOTEL	145 FELL			C	
835	2	MCGOVERN BLDG.	1440-1444 MARKET			C	
836	6		1548-1550 MARKET			C	
836	7	SULLIVAN GARAGE	55 OAK			C	
836	9		1576 MARKET			C	
836	10	MIRAMAR APTS.	1582 MARKET	3		B	
836	12	LEVENTRITT GARAGE	24-30 FRANKLIN			C	
3506	2	COCA COLA PLANT	1500 MISSION	1		B	<G>
3506	4	BOAS PONTIAC & HONDA	10-50 SOUTH VAN NESS			C	
3507	5,6		24-70 TENTH ST.			C	
3508	1	WESTERN FURN. EXCH.	1301-1355 MARKET	1		B	<G>
3508	13		1340 MISSION			C	
3508	18	NEW CLAREMONT HOUSE	80-98 NINTH ST.			C	
3508	20	SCANLON LNDRY	1320-1328 MISSION			C	
3508	22	J.H.HJUL BLDG.	1336-1338 MISSION			C	
3508	24		1360 MISSION			C	
3508	25		1366-1370 MISSION			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
282	4A	SUTTER/TAYLOR APTS.	701 TAYLOR	1		C	
283	4A	YWCA	620 SUTTER	1		B	<G>
283	4		600-608 SUTTER	4		C	<E>
283	7		680 SUTTER	4		C	
283	8		690 SUTTER	4		C	
283	9		700 TAYLOR			C	
283	22	METROPOLITAN CLUB	640 SUTTER	1		A	<G>
284	4	PHYSICIAN'S BLDG.	500 SUTTER	1		A	<G>
284	6	CARTWRIGHT HOTEL	524 SUTTER	4		C	
284	7	7TH CHURCH CHR. SCI.	532 SUTTER	2		B	<G>
284	8		540 SUTTER	2		B	<G>
284	9		550-556 SUTTER	4		C	
284	10	HOTEL REGENT	562 SUTTER	2		B	<G>
284	11		578-580 SUTTER			C	
284	12		602 MASON	1		B	<G>
285	3		427-439 STOCKTON	4		C	
285	4		417 STOCKTON	4		C	
285	6	MEDICAL/DENTAL BLDG.	450 SUTTER	1		A	<G>
285	9	ACADEMY OF ART COLL.	540 POWELL	1		B	<G>
285	10	CHESTERFIELD APTS.	560 POWELL	1		B	<G>
285	14	ANGELUS APTS.	645 BUSH	1		B	
285	16	CROWLEY APTS.	635 BUSH	1		B	
285	18	MATABELLE APTS.	625 BUSH	4		C	
295	8	SIR FRANCIS DRAKE H.	432-462 POWELL	1		A	<G>
295	10	OLD P.G.& E.	445-447 SUTTER	1		A	<G>
296	1		449 POWELL	1		B	<G>
296	2		445-447 POWELL	4		C	
296	5	CHANCELLOR	433 POWELL	4		B	<G>
296	8	CHAMBERLAIN BLDG.	442 POST	2		B	<G>
296	9	ELKS CLUB	450 POST	1		A	<G>
296	10	MEDICO-DENTAL BLDG.	470-490 POST	1		B	<G>
296	12A	ST. FRANCIS APTS.	542 MASON	4		C	
296	12B	FRANCISCA CLUB	595 SUTTER	4		B	<G>
296	13		575 SUTTER	4		C	
296	13A		559-565 SUTTER	2		B	
296	13C	LOWELL BLDG	547-555 SUTTER	4		C	
296	13D	WESTPHAL BLDG	535-545 SUTTER	4		C	
296	14B		439 POWELL	4		C	
296	14A		435 POWELL	4		C	
297	1	MARINE'S MEMORIAL	609 SUTTER	1		B	<G>
297	5	OLYMPIC CLUB	524 POST	1		A	<G>
297	7	BOHEMIAN CLUB	624 TAYLOR	1		A	<G>
297	9		693 SUTTER	4		C	
297	10		679-683 SUTTER	4		C	
297	12		655 SUTTER	4		C	
297	13	HOTEL BERESFORD	635 SUTTER	4		C	
297	14	ACADEMY OF ARTS	625-627 POWELL	2		B	<G>
298	1	SUSSEX HOUSE	701 SUTTER	4		C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DC	N&C	H	NOTES
298	2	HAWTHORNE APTS.	627 TAYLOR	4		C	
298	3	EISENBERG APTS.	625 TAYLOR	4		C	
298	4	J.WINTERBURN HOTEL	621 TAYLOR	4		C	
298	5	TAYLOR HOTEL	615 TAYLOR	4		C	
298	6	ALVARADO HOTEL	600 POST	1		B	
298	7	J.J.MOORE APTS.	620 POST	4		C	
298	8		624 POST	4		C	
298	33	H.B.JOHNSON BLDG.	721-737 SUTTER	4		C	
298	34	HOTEL DELUXE	717 SUTTER	4		C	
305	1	M.A.HUNT APTS.	551-555 TAYLOR			C	
305	2	THE ADELAIDE INN	5 ADELAIDE			C	
305	3		533 TAYLOR			C	
305	6	GEARY/TAYLOR HOTEL	533 TAYLOR			B	
305	7	ST.FRANCIS ARMS	516-528 GEARY			C	
305	29	HOTEL WORTH	639 POST			B	
305	32	SHELDON HOTEL	625-633 POST			C	
305	33	GAY APTS.	617-619 POST			C	
305	34	MARY PRIEST HOTEL	611-615 POST			C	
306	2	WATER DEPT. BLDG.	425 MASON	4		B	<G>
306	4		400-414 GEARY	4		C	
306	6	PAISLEY HOTEL	418-432 GEARY	4		C	
306	7A		450 GEARY	2		B	<G>
306	7B		458 GEARY	2		B	<G>
306	7	SOMERTON HOTEL	436-440 GEARY	4		C	
306	8		468 GEARY	4		C	
306	9	HOTEL DAVID	476-480 GEARY	4		C	
306	11		484-486 GEARY	4		C	
306	12	MARYLAND HOTEL	490-498 GEARY			C	
306	15	CLIFTON APTS.	518-520 TAYLOR			C	
306	16/9	POST/TAYLOR GARAGE	569 POST	4		C	
306	17		593-599 POST			C	
306	20		555 POST	2		B	<G>
306	22	HOTEL CECIL	545 POST	4		C	
307	6	ROSEBUDS ENGLISH PUB	366-374 GEARY	4		C	
307	7	HOTEL RAFAEL	386 GEARY	4		C	
307	8	NATIVE SONS BLDG.	414 MASON	1		A	<G>
307	9	1ST CONGREGATIONAL	491 POST	1		A	<G>
315	10	SPAULDING HOTEL	238-242 O'FARRELL	4		C	
315	14		272 O'FARRELL	4		C	
315	15		280 O'FARRELL	4		C	
315	16	HOTEL VIRGINIA	300-324 MASON	4		C	
315	17	KING GEORGE HOTEL	334 MASON	4		C	
315	20A		381 GEARY	4		C	
315	22	HOTEL STEWART	347-373 GEARY	4		B	<G>
315	26	LEFTY O'DOUL'S	333 GEARY	4		B	<G>
316	1A	GEARY THEATER	415 GEARY ST.	1	X	A	
316	10	KBHK-TV	420 TAYLOR	4		B	<G>
316	13	CLIFT HOTEL	491 GEARY	1		B	<G>

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CP	N&C	H	NOTES
316	18A	CURRAN THEATER	445 GEARY	1		A	<G>
316	18		459 GEARY	1		B	<G>
317	1	HOTEL BELLEVUE	501 GEARY	1		B	<G>
317	2	JUDSON WHEELER GAR.	415 TAYLOR	4		C	
317	3	HOTEL CALIFORNIAN	403 TAYLOR	1		B	
317	4	ALLEN APTS.	428-430 O'FARRELL			C	
317	5	EUREKA BENEVOLENT	434 O'FARRELL			B	
317	6	WILSON HOTEL	438 O'FARRELL			B	
317	27	MATTHEW LITTLE APTS.	531 GEARY			B	
323	6	MENDEL APTS.	415 JONES			B	
323	7	WINDELER APTS.	424 ELLIS			B	
324	1	COLUMBIA HOTEL	401 O'FARRELL			B	
324	2	DON/MARK TWAIN HOTEL	339-347 TAYLOR			C	
324	4C	GLIDE HOTEL & APTS.	322-332 ELLIS			C	
324	4A	GLIDE MEMORIAL	302 ELLIS			B	
324	6	GEO.HAAS REALTY APTS	344 ELLIS			C	
324	9	SMITH & STEWART APTS	369 ELLIS			C	
324	10	HETTY APTS.	372-376 ELLIS			C	
324	12	RIVIERA HOTEL	420 JONES			C	
324	13	D.J.CLANCY APTS.	424 JONES			C	
324	14	ABBEY APTS.	450 JONES			C	
324	15	SULLIVAN BLDG.	485-489 O'FARRELL			C	
324	18	GAS CONSUMERS ASSN.	467 O'FARRELL			C	
324	20	WILCHAR APTS.	447-453 O'FARRELL			C	
324	21	HOTEL WINTON	433-445 O'FARRELL			C	
324	22	BROWNE HOTEL	415-421 O'FARRELL			C	
326	10	HOTEL RAMONA	172-174 ELLIS			C	
326	13	FRED FARISH BLDG.	279 O'FARRELL			C	
326	18	HOTEL BARCLAY	235-243 O'FARRELL	1		B	<G>
330	13	KOWALSKY APTS.	120 MASON	1		B	
330	14	OLYMPIC HOTEL	134-140 MCALLISTER			C	
330	23	CONTINENTAL HOTEL	119 ELLIS	1		B	<G>
331	1A	HAMAMM SULTAN BATHS	227-231 ELLIS			C	
331	1	FITEL PHILLIPS CO.	201-225 ELLIS			C	
331	3	WOODFIELD BLDG.	135-147 MASON			C	
331	6	HOTEL MASON	101 MASON	1		B	
331	7	TWOMBLY HOTEL	128-132 EDDY			C	
331	8	LANGHAM HOTEL	136-144 EDDY			C	
331	9	HOTEL CECIL	156 EDDY			B	
331	12	ELDON APTS.	240-248 TAYLOR			C	
331	13	PERKINS APTS.	250-262 TAYLOR			C	
331	16	FLOOD GARAGE	233 ELLIS			B	
332	2		225 TAYLOR			C	
332	3	HOTEL RITZ	200-216 EDDY			C	
332	4	HOTEL OLYMPIC	230-232 EDDY			C	
332	5	LACOSTE HOTEL	234-244 EDDY			C	
332	6	SHOENFIELD BLDG.	246-250 EDDY			C	
332	10	BEL-AIR HOTEL	342 JONES			B	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
332	12	HOTEL MENTONE	387-97 ELLIS			B	
332	14	CORONADO HOTEL	373-377 ELLIS			C	
332	15	MCLAUGHLIN BLDG.	369 ELLIS			C	
332	16		355-365 ELLIS			C	
333	1	GASHWILER APTS.	401-421 ELLIS			C	
333	2	MRS.J.BALDWIN APTS.	345 JONES			C	
333	5		333 JONES			C	
333	6	HOTEL HERALD	302 EDDY			B	
333	7	O'BRIEN HOTEL	322-330 EDDY			C	
333	21	HOTEL ARTMAR	423-433 ELLIS			C	
336	2	A.B.HASBACHER HOTEL	225-229 HYDE			C	
336	4	WILSON APTS.	416-422 TURK			C	
336	5	MARYE BLDG.	440 TURK			C	
336	8	MEYER APTS.	500-514 LARKIN			C	
336	11	KINCANON & W. APTS.	528-532 LARKIN			C	
336	14	KINCANON & W. APTS.	550 LARKIN			C	
336	14A	SENTINEL HOTEL	587 EDDY			C	
336	14C	KINCANON & W. APTS.	556 LARKIN			C	
336	14E	MAYFLOWER APTS.	575 EDDY			C	
336	15	DUSENBURY APTS.	555 EDDY			C	
336	16	MRS.J.GIBBS GARAGE	545 EDDY			C	
336	17	FILM EXCHANGE	245-259 HYDE			13*	<G>
336	18	"	"			13*	
336	19	"	"			B	
338	1A	PADRE HOTEL	235 JONES			B	
338	2	RAMACCIOTTI APTS.	219-233 JONES			C	
338	4	205 JONES APTS.	201-217 JONES			C	
338	5	DIXON HOTEL	218-220 TURK			C	
338	9	GRANADA GARAGE	256-266 TURK			C	
338	10	FASSIO APTS.	270-272 TURK			C	
338	13		200-220 LEAVENWORTH			C	
338	14	LAIOLO APTS.	222 LEAVENWORTH			C	
338	22		335-339 EDDY			C	
338	23		301-311 EDDY			C	
338	24	HOTEL VAN DORN	240-242 TURK			C	
339	2		131 TAYLOR			C	
339	3	HYLAND HOTEL	101-121 TAYLOR			C	
339	4	DENNING HOTEL	116-120 TURK			C	
339	5	PORTOLA HOTEL	124-126 TURK			C	
339	6	DIXON BLDG.	130-134 TURK			C	
339	7	ALICIA MCCONE BLDG.	136-140 TURK			C	
339	8	BOGART GARAGE	150 TURK			B	<G>
339	11A	HOTEL ANTONIA MANOR	180-194 TURK			C	
339	11	A.F.NIEDT APTS.	170-174 TURK			C	
339	13	MUSICIANS UNION	226 JONES			B	
339	14	HOTEL ROOSEVELT	240-256 JONES			C	
339	15/	HARRIMAN APTS.	245-253 EDDY			C	
339	15	METROPOLITAN GARAGE	265 EDDY			B	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
339	16	HOTEL EDDY	233-237 EDDY			C	
340	1	AMBASSADOR HOTEL	35 MASON			B	
340	4	OXFORD HOTEL	2-16 TURK	1		B	<G>
340	7	DALT HOTEL	34 TURK			B	
340	8	ZELLERBACH HOTEL	50-52 TURK			C	
340	9	ARANDA HOTEL	62 TURK			B	
340	10	HOTEL TAYLOR/DAHLIA	66-74 TURK			C	
340	11	ALLEN BLDG.	76-80 TURK			C	
340	12	HOTEL WARFIELD	108-120			C	
340	14		136 TAYLOR			B	
340	15	MODERNE HOTEL	144-164 TAYLOR			C	
340	16	ROSENBAUM EST. BLDG.	161-181 EDDY			C	
340	18	G.& A.HARSHALL HOTEL	141-145 EDDY			C	
342	1	DEAN BUILDING	950-964 MARKET			C	
342	2		966-970 MARKET			C	
342	4		972 MARKET			C	
342	7	WARFIELD THEATER	982 MARKET	1		A	<G>
342	13	CREST THEATER	980 MARKET	2		B	<G>
343	1	THE GRAND HOTEL	101 TURK			C	
343	2	GOLDEN GATE THEATER	42 GOLDEN GATE	1		A	<G>
343	8	RIVERSIDE APTS.	48-50 GOLDEN GATE			B	<G>
343	9	AUTO SERVICE GARAGE	65-82 GOLDEN GATE			C	
343	10	MYERS BLDG.	86-98 GOLDEN GATE			C	
343	12		124-130 JONES			C	
343	13	HOTEL LYRIC	132-148 JONES			C	
343	16	BELL GARAGE	175 TURK			B	
343	17A	MATTHEW BRADY APTS.	149-155 TURK			C	
343	17	HESS /EL CREST APTS.	161-165 TURK			C	
343	18	MORTIMER SAMUEL BLDG	133-145 TURK			C	
344	3	SPERRY LAND CO.	134 GOLDEN GATE	1		B	
344	4	K.OF C. BLDG	150 GOLDEN GATE	1		A	
344	6A	BENNETT BLDG.	146-150 LEAVENWORTH			C	
344	6	LURIE FILM EXCHANGE	134-144 LEAVENWORTH			C	
344	6B	PADRE APTS.	281 TURK ST.			B	
344	7	KING EDWARD APTS.	275 TURK			C	
344	8	INVESTMENT PROP GAR.	225-265 TURK			B	
345	1	PAGE HOTEL	151-169 LEAVENWORTH			C	
345	4	YMCA	200 GOLDEN GATE	1		B	
345	8	HOTEL EARLE	276-284 GOLDEN GATE			C	
345	9	BALBOA HOTEL	100-120 HYDE			C	
345	10	LURIE BLDG.	122-132 HYDE			C	
345	12	CRAEMER APTS.	138 HYDE			C	
345	12B	G.MARTIN APTS.	369-371 TURK			C	
345	12C	KIPLING APARTMENTS	381 TURK			B	<G>
345	13C	YMCA HOTEL	351 TURK			B	<G>
345	15	LOUIS LURIE BLDG.	321-333 TURK			C	
345	16	MRS.G.METCALFE APTS	309-315 TURK			C	
346	1	H.C.KENNAN APTS.	147 HYDE			B	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	CS	N&C	H	NOTES
346	2		135-145 HYDE			C	
346	3		129 HYDE			C	
346	3E	RULF'S FILM EXCHANGE	125 HYDE	3		B	<G>
346	4		332-348 GOLDEN GATE			C	
346	6	HAMPTON COURT APTS.	366-398 GOLDEN GATE			B	
346	7	CAMPBELL APTS.	434 LARKIN			C	
346	10		452-460 LARKIN			C	
346	11	KAUFMAN APTS.	475-479 TURK			C	
346	13	HOTEL SENATE	463-471 TURK			C	
346	15	HOTEL WARREN/VINCENT	445-449 TURK			C	
346	16		431-437 TURK			C	
347	5	GLENBURN HOTEL	246 MCALLISTER			C	
347	6A	RAMONA APTS.	260 MCALLISTER			C	
347	6	J. GREENBACK APTS.	250 MCALLISTER			C	
347	7	THE MADONA HOTEL	268-272 MCALLISTER			C	
347	9	HERSKO APTS.	324 LARKIN			C	
347	12	JACOBS BLDG.	361-365 GOLDEN GATE			C	
348	6	TEMPLE METHODIST CH.	100-120 MCALLISTER	1		A	
348	7	ARGYLE HOTEL APTS.	132 MCALLISTER	1		B	
348	17	KGO TV	255 GOLDEN GATE	2		B	
348	23	COFFIN BLDG.	247 GOLDEN GATE			C	
348	24		241-243 GOLDEN GATE			C	
348	26	LOUIE LURIE BLDG.	201-229 GOLDEN GATE			C	
349	1		101-127 GOLDEN GATE			C	
349	2	HOTEL BOYD	39 JONES	1		B	
349	3	HIBERNIA BANK	1 JONES	1	X	A	<G>
349	4	SALVATION ARMY HOTEL	36-44 MCALLISTER			C	
349	8		60 LEAVENWORTH			C	
349	10A		177-191 GOLDEN GATE			C	
349	11	ST. BONIFACE SCHOOL	175 GOLDEN GATE			B	
349	12	ST. BONIFACE CHURCH	155 GOLDEN GATE	1		A	<G>
349	13	FRANSISCAN FATHERS	133 GOLDEN GATE			B	
350	1	SAN CHRISTINA BLDG.	1000 MARKET	1		B	<G>
350	2	BIJOU THEATER	1028-1056 MARKET			C	
350	4	ANGLO-CALIF. TRUST	1072 MARKET	1		B	<G>
351	1	HOTEL SHAW	1110-1112 MARKET	1		B	<G>
351	32	METHODIST BOOK CONC.	83 MCALLISTER	1		A	<G>
351	33		77-79 MCALLISTER			C	
355	3	SCHWEITZER BLDG	1212 MARKET			C	
355	4	BUCKLEY BLDG.	1220-1224 MARKET			C	
355	5	HOPE REALTY BLDG.	1232-1236 MARKET			C	
355	6	MOCKER BLDG.	1240-1242 MARKET			C	
355	7		1244 -1254 MARKET			C	
355	8		1256-1266 MARKET			C	
355	9	HOTEL AVALON	1272-1276 MARKET			C	
355	10	MUIRHEAD HOTEL	1278-1298 MARKET			C	
355	15		1200 MARKET	1		B	
3701	5		38 EIGHTH ST.			C	<B>

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3701	10	LEMCKE BLDG.	30 LASKIE ST.			C	
3701	11	LEMCKE BLDG.	36-38 LASKIE			C	
3701	22	HOTEL POTTER	1284-1288 MISSION			C	
3701	23	BLACKSTONE APTS.	77-83 NINTH ST.			C	
3701	59		745 STEVENSON			C	
3701	59	SAN FRANCISCAN HOTEL	1215 MARKET	2		A	
3702	1	IOOF HALL	6-26 SEVENTH ST.	1		A	<G>
3702	2		30-34 SEVENTH ST.			C	
3702	15	HOTEL ODEON	36-52 SEVENTH ST.			C	
3702	16	HOTEL ST. RAPHAEL	54-64 SEVENTH ST.			C	
3702	32	GREYHND.PKGE.EXPRESS	1110-1118 MISSION			C	
3702	39	ENTERPRISE ELEC. WKS	1164 MISSION			C	
3702	46	STRAND THEATER	1127 MARKET			C	
3702	47	EMBASSY THEATER	1125 MARKET	1		B	<G>
3702	48		1115-1117 MARKET			C	
3703	1	DEIGER BLDG.	1001-1005 MARKET			C	
3703	2	HOTEL WINSOR	20 SIXTH ST.			C	
3703	3	CURTIN BLDG.	26-28 SIXTH ST.			C	
3703	4	SENECA HOTEL	32 SIXTH ST.	3		B	
3703	5	HOTEL KING	42-46 SIXTH ST.			C	
3703	6	BARUCH & CO. HOTEL	48-62 SIXTH ST.			C	
3703	10		532-536 JESSIE			C	
3703	12	E.OUTFITTING CO.	527 STEVENSON			C	
3703	25		531-537 JESSIE			C	
3703	27	HOTEL LLOYD	64-68 SIXTH ST.			C	
3703	28	BALDWIN HOUSE HOTEL	70-76 SIXTH ST.			C	
3703	29	SULLIVAN ESTATE CO.	80-96 SIXTH ST.			C	
3703	33		1026 MISSION			C	
3703	41	MAIN POST OFFICE	95 SEVENTH ST.	1	X	A	
3703	50	WEINSTEIN CO.BLDG.	535 STEVENSON			C	
3703	58,69		1043-45 MARKET			C	
3703	59	GRANT BUILDING	1095 MARKET	1		A	<G>
3703	61	FEDERAL HOTEL	1083 MARKET	2		B	<G>
3703	63	LIPPERT THEATER	1067-1071 MARKET	2		B	<G>
3703	64		1063 MARKET			C	
3703	65	EDE BLDG	1059 MARKET	2		A	<G>
3703	67	STERLING BLDG	1049 MARKET			C	(A)
3703	70		1035 MARKET			C	
3703	74		1025 MARKET			C	
3703	75		1023 MARKET			C	
3703	76	EASTERN OUTFITTING	1019-1021 MARKET	2		A	<G>
3703	78		1007-1009 MARKET			C	
3703	81	KEAN HOTEL	1018-1024 MISSION	3		B	
3703	82		532 STEUART			C	
3704	2	HALE BROS. WAREHOUSE	34-36 FIFTH ST.			C	
3704	3	OAKWOOD HOTEL	40-48 FIFTH			C	
3704	6		427 STEVENSON			C	
3704	11	OLD U.S.MINT	88 FIFTH ST.	1	X	A	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 5 (CENTRAL C-3-G: TENDERLOIN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	[illegible]	N&C	H	NOTES
3704	12	REMEDIAL LOAN ASSN.	66 MINT ST.	1		B	
3704	13	HOTEL CHRONICLE	936-940 MISSION			C	
3704	15		942-946 MISSION			C	
3704	17	DIERKS LODGING HOUSE	948-952 MISSION			C	
3704	18	PIERCE BLDG.	954-960 MISSION			C	
3704	19	SMITH O'BRIEN BLDG.	966 MISSION			C	
3704	20	LYONS BLDG.	968 MISSION			C	
3704	21	SULLIVAN BLDG.	972-976 MISSION			C	
3704	22	SULLIVAN BLDG.	980-984 MISSION			C	
3704	24	ADAMS CO. BLDG.	986-988 MISSION			C	
3704	26	BARKER HOTEL	65-83 SIXTH ST.			C	
3704	28		471 JESSIE			C	
3704	29		431 JESSIE			C	
3704	34		54 MINT	1		B	
3704	35	WOBBER'S INC.	444 JESSIE			C	
3704	39	PG & E SUBSTATION T	465 STEVENSON			C	
3704	50	HILLSDALE HOTEL	47 SIXTH ST.	3		B	
3704	51	BALLIS HOTEL	43-45 SIXTH ST.			C	
3704	52	HOTEL MAZE	39-41 SIXTH ST.			C	
3704	53	MODEL HOTEL	35-37 SIXTH ST.			C	
3704	59		443-447 STEVENSON			C	
3704	68	HALE BROS DEPT STORE	979 MARKET	2		A	<G>
3704	69	WILSON BLDG.	973 MARKET	2		A	<G>
3704	71	EMPRESS THEATER	949 MARKET	2		B	<G>
3704	72	MORRISON'S	943 MARKET			B	<G>

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 6 (C-3-R: UNION SQUARE WEST SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	SC	N&C	H	NOTES
285	5	MCCLOUD BLDG.	400-406 SUTTER	4		C	
285	5		415 STOCKTON	4		C	
286	3	HOTEL BALDWIN	321-323 GRANT	4		C	
286	4	ABRAHAMSON BLDG.	311 GRANT	1		A	<G>
286	5		301 GRANT	1		B	<G>
286	6		310 SUTTER	1		B	<G>
286	7		312 SUTTER	1		B	<G>
287	9	ROSE BLDG. (SLOAN'S)	216 SUTTER	1		A	<CG>
287	10	SUTTER BUILDING	250 SUTTER	1		A	<G>
287	11	SATHER BUILDING	256 SUTTER	1		B	<G>
287	12	BEMISS BUILDING	266 SUTTER	1		A	<G>
293	5	BULLOCK & JONES	126 POST	1		A	<G>
293	6	JEWELERS BUILDING	150 POST	1		B	<G>
293	7		214 GRANT/180 POST	1		A	<G>
293	8	PHOENIX BLDG	220-228 GRANT	1		B	
293	9	WHITE HOUSE	255 SUTTER	1		A	<G>
294	1	HAMMERSMITH & CO.	301 SUTTER	1	X	A	<G>
294	2		255 GRANT	4		C	
294	3		251-253 GRANT	4		C	
294	5		233 GRANT	1		B	<G>
294	6		201 GRANT	1		A	<G>
294	7	GUGGENHEIM BLDG.	216-220 POST	4		C	
294	8	GUMPS/ELIZ. ARDEN	228-240 POST	4		C	
294	9	GUMP'S	246-268 POST	2		B	<G>
294	10		272 POST	4		C	
294	11	J.FREDERICKS	278-298 POST	1		A	<G>
294	12	VASILIS	44 CAMPTON PLACE	4		C	
294	13!	HOTEL DRAKE-WILTSH.	340 STOCKTON	4		B	<G>
294	13		334 STOCKTON	4		C	
294	15	GALEN BUILDING	391 SUTTER	1		B	<G>
294	16	NATHALIE NICOLI BLDG	371-375 SUTTER	4		C	
294	17	FORBIDDEN CITY N. C.	355 SUTTER	2		B	<G>
294	19		345-353 SUTTER	4		C	
294	21	HOTEL ALANO	323-333 SUTTER	4		C	
294	22	NEWBEGIN BUILDING	315-317 SUTTER	4		C	
294	23	ORPHEUS	307-309 SUTTER	4		C	
295	5	BULLOCK & JONES	340 POST	1		B	<G>
296	6	ARGONAUT CLUB	421 POWELL	1		B	<G>
296	7		438 POST	4		B	<G>
307	1	ST. FRANCIS HOTEL	301-345 POWELL	1		A	<G>
308	1	UNION SQ. GARAGE	UNION SQUARE			B	
309	1	BROOKS BROS.	201-209 POST	1		A	<G>
309	3	GRANAT BROS.	100 GEARY	4		C	
309	4	MARION BUILDING	108 GEARY	1		B	<G>
309	5	E. SIMON	120 GEARY	1		B	<G>
309	6	SACH'S BUILDING	132 GEARY	1		B	<G>
309	7		146 GEARY	4		C	
309	8		152 GEARY	4		C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 6 (C-3-R: UNION SQUARE WEST SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
309	9		156 GEARY	4		C	
309	10	WHITTELL BLDG.	166 GEARY	1		A	<G>
309	11	COLSON BUILDING	200-212 STOCKTON	4		C	
309	12		177 MAIDEN LANE	4		C	
309	13		216 STOCKTON			B	<G>
309	14	A.M. ROBERTSON BLDG.	218-222 STOCKTON	4		B	<G>
309	16	LLOYD BLDG	118-124 MAIDEN LN	4		C	
309	17	GRAFF BLDG	233 POST	4		C	
309	19	V.C. MORRIS	140 MAIDEN LANE		X		
309	20	SCHROTH BUILDING	234 STOCKTON	1		B	<G>
309	22	LATHROP BLDG.	275 POST	4		C	
309	23	OLD RANSOHOFF'S	259 POST	1		B	<CG>
309	24	MERCEDES BLDG	251-253 POST	4		C	
309	27	S. CHRISTIAN	225 POST	1		B	<G>
310	8	ROSENSTOCK	28 GEARY	1		B	<G>
310	12	HOTEL GREYSTONE	66 GEARY	4		C	
310	13	CAILLEAU BLDG.	88 GEARY	4		C	
310	15	LIVINGSTON BROS.	100 GRANT	4		C	
310	16		166 GRANT	4		C	
310	17	OLD SAKS 5TH AVE.	140 GRANT	4		C	
310	19	(OLD) LIEBES BLDG.	175 POST	1		B	<G>
310	20	ROTHCHILD BUILDING	165 POST	4		C	<G>
310	24	ST. PAUL BOOK CTR.	46 GEARY	4		C	
312	6	WELLS FARGO	744 MARKET	1	X	A	<G>
312	8	(OLD) I.MAGNIN	50 GRANT	1		B	<G>
312	9	BANKER'S INV. BLDG.	722 MARKET	1		B	<G>
313	1	PARAGON BUILDING	101-111 GEARY	4		C	
313	2		59 GRANT	4		C	
313	3	ELEANOR GREEN BLDG.	51-55 GRANT	1		B	<G>
313	4		45 GRANT	4		C	
313	5	FISHER BUILDING	39-41 GRANT	4		C	
313	7	ZOBEL	17 GRANT	1		B	<G>
313	8	SECURITY PACIFIC	1 GRANT	1	X	A	<G>
313	10	KOHLER & CHASE	20 O'FARRELL	1		B	<G>
313	16		129 GEARY	4		C	
314	1	I. MAGNIN	233 GEARY			33*	<G>
314	2	MACY'S	101 STOCKTON	4		B	<G>
314	6	ST. MORITZ HOTEL	180-190 O'FARRELL	4		C	
314	7	OMAR KHAYYAM'S	200 POWELL	1		A	<G>
314	8	LEW SERBIN CO.	222 POWELL	4		C	
314	9		226-230 POWELL	4		C	
314	10	HOTEL STRATFORD	236 POWELL	4		C	
314	11	LINCOLN BLDG.	293 GEARY	1		B	
314	12	ST. PAUL BUILDING	285-291 GEARY	4		C	
314	14	WERNER BUILDING	251-259 GEARY	4		C	
315	1	ELKAN GUNST BLDG.	301 GEARY	1		B	<G>
315	2		235-245 POWELL	4		C	
315	3	MANX HOTEL	201 POWELL	4		C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 6 (C-3-R: UNION SQUARE WEST SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
315	4	HOWARD BUILDING	207-217 POWELL	4		C	
326	1	MARQUARD'S	201 O'FARRELL	1		B	<G>
326	2	HOTEL HERBERT	151-161 POWELL	4		C	
326	3		135 POWELL	2		B	<G>
326	4		111 POWELL	4		B	<G>
326	5	THE MRS. BUTLER BLDG	120 ELLIS	4		C	
327	1	IMPERIAL REALTY	65 STOCKTON	4		B	<G>
327	2		55-59 STOCKTON	4		C	
327	12	HOTEL GOLDEN STATE	100-118 POWELL	4		C	
327	13		120 POWELL	4		C	
327	18	DOWNTOWN CNTR. BLDG.	165-167 O'FARRELL	4		C	
327	20		107 O'FARRELL	4		C	
327	22		175-179 O'FARRELL	4		C	
327	22	ELEVATED SHOPS	134 POWELL	4		C	<G>
328	1	PHELAN BUILDING	760 MARKET	1	X	A	<G>
328	2	GRODIN'S	790 MARKET	4		C	
328	34	J. MAGNIN	46 STOCKTON	1		B	(G)
329	1	WEST BANK BUILDING	800 MARKET			B	<G>
329	5	FLOOD BUILDING	870 MARKET	1	X	A	<G>
329	6	JOHN'S GRILL	61-65 ELLIS	4		C	
330	1	POWELL BLDG.	111 ELLIS	4		C	
330	2		45-49 POWELL	4		C	<G>
330	3	POWELL CINEMA	35-41 POWELL	4		C	
330	4	HOTEL POWELL	17 POWELL	1		B	<G>
330	5	BANK OF AMERICA	1 POWELL	1		A	<G>
341	5	GARFIELD BLDG	938-942 MARKET	4		C	
341	6	MECHANIC'S SAVINGS	948 MARKET	1		B	<G>
341	7	RUBY HILL CO. BLDG	34 MASON	1		B	
341	8	HOTEL BRISTOL	48-98 MASON			C	
3704	1	J.C. PENNEY'S	901 MARKET AT 5TH	1		A	<G>
3704	74	NAT'L DOLLAR STORE	931-933 MARKET ST.			C	
3704	75	NAT'L DOLLAR STORE	929 MARKET			C	
3704	76		925 MARKET			C	
3704	77	TAYLORS	923 MARKET			C	
3705	1	PACIFIC BUILDING	801-823 MARKET	1		A	<G>
3705	4	KEYSTONE HOTEL	54-68 FOURTH ST.	1		B	
3705	5	WAGNER BLDG.	70-74 FOURTH ST.			C	
3705	7	S.F. BULLETIN	810 MISSION	1		B	
3705	8		816 MISSION	2		B	
3705	9	SWETT CO.BLDG.	820-822 MISSION			C	
3705	10	ARONSON BLDG	826-830 MISSION			C	
3705	12		832 MISSION			C	
3705	13	BOYD INVESTMENT CO.	844-848 MISSION			C	
3705	15		862-864 MISSION			C	
3705	17	DELMAR HOTEL	870-878 MISSION			C	
3705	21	PICKWICK ANNEX	884-890 MISSION			C	
3705	21	PICKWICK HOTEL	67 FIFTH STREET	1		B	
3705	34	COSTIGAN BLDG.	308-310 JESSIE			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 6 (C-3-R: UNION SQUARE WEST SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
3705	37	COMMERCIAL BUILDING	825 MARKET	1		B	<G>
3705	38	EMPORIUM WAREHOUSE	364-376 JESSIE			C	
3705	39	HOTEL LANKERSHIM	53-63 FIFTH ST.			C	
3705	42	LINCOLN BUILDING	879 MARKET			B	<G>
3705	43	EMPORIUM	835 MARKET	1		A	<G>
3706	1	CENTRAL TOWER	703 MARKET	3		B	<G>
3706	14	ST. PATRICK'S RECT.	760 MISSION			C	
3706	28	APPAREL CTR. BLDG.	49 4TH STREET			B	<G>
3706	48	HUMBOLDT BANK	783-785 MARKET	1		A	<G>
3706	61	CARROL & TILTON BLDG	735 MARKET	1		B	<G>
3706	62	BANCROFT BUILDING	725 MARKET	1		B	<G>
3706	63	BLISS & FAIRWEATHER	721 MARKET			C	
3706	64	MORRIS PLAN CO.	715-719 MARKET			C	
3706	68	ST. PATRICK'S CHURCH	756 MISSION		X	A	
3706	70	JESSIE ST. SUBST'N	220 JESSIE		X	A	
3706	71	MERCANTILE BLDG.	700 MISSION			A	<G>

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 7 (NORTH C-3-G: CHINATOWN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
209	2		800-804 GRANT			C	
209	3	ROSSIER BLDG.	808-814 GRANT			C	
209	4		824 GRANT			A	
209	6	GRAY BLDG.	848 GRANT			C	
209	7	HANG ON TONG CO.BLDG	850 GRANT			C	
209	8		854-864 GRANT			C	
209	9	CHINATOWN TELEPHONE	743 WASHINGTON			A	
209	10	ARATA HOTEL	737-739 WASHINGTON			C	
209	11	HENRY WILLIAR HOTEL	731-735 WASHINGTON			C	
209	12	WM. EHRENPFORT BLDG.	727-729 WASHINGTON			C	
209	13	F.W.DUN BLDG.	49-57 BRENHAM PLACE			C	
209	14	CHINESE C.CHURCH	21 BRENHAM PLACE			B	
209	15	WING SUN MORTUARY	17 BRENHAM PLACE			B	
209	16		15 BRENHAM PLACE			C	
210	1	SANG WO CO. BLDG.	857-867 GRANT			C	
210	3	SAM YAP BENEV. ASSN	831 GRANT			B	
210	4	ADAMS INVESTMENT CO.	815-829 GRANT			C	
210	5	SOO YUEN BENEV.ASSN	801 GRANT			A	
210	6	BO ON TONG	808 CLAY			B	
210	7		100-108 WAVERLY			C	
210	8	GEE FAMILY ASSN.	109 WAVERLY PLACE			B	
210	9		820 CLAY			B	
210	10		844-848 CLAY			C	
210	11	STOUPE BLDG.	852-854 CLAY			C	
210	12	LOOK TIN ELI HOTEL	858-870 CLAY			C	
210	13	PAULIST CHINESE CTR	900 STOCKTON			B	
210	14	ST.MARY'S CHINESE	930 STOCKTON			B	
210	15		31-37 SPOFFORD			C	
210	20	TAI FUNG WO & CO.	855-857 WASHINGTON			C	
210	21	CHINESE FREEMASON S.	39-49 SPOFFORD			C	
210	22	CHEW GON BLDG.	22 SPOFFORD			C	
210	23		32-34 SPOFFORD			C	
210	24	CHEE KUNG TONG	36-38 SPOFFORD			B	
210	25		40-50 SPOFFORD			C	
210	28		835-841 WASHINGTON			C	
210	31	WONG GOW BLDG.	143-147 WAVERLY			C	
210	32	Y. KEUNG BENEV.ASS'N	137-141 WAVERLY			C	
210	33	YEE FUNG TOWY FAMILY	131 WAVERLY			B	
210	34	SUE HING BENEV. ASSN	123 WAVERLY PLACE			A	
210	35	CHIN CHONG DONG BLDG	117 WAVERLY PLACE			B	
210	36	LEE FAMILY ASSN.	109 WAVERLY PLACE			A	
210	38	W.GARDNER LODG'G HSE	124-132 WAVERLY			C	
210	39	SHEW KAE ASS'N BLDG.	138-142 WAVERLY			C	
210	40	JENG SEN BUDDHISM/T.	146-150 WAVERLY			C	
210	43	CHIN YUE & CHAN YU	815-817 WASHINGTON			C	
210	44	SAM WO	813 WASHINGTON			C	
210	45		52-54 SPOFFORD			C	
210	46		151-155 WAVERLY			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

SUBAREA 7 (NORTH C-3-G: CHINATOWN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DCP	N&C	H	NOTES
211	1		933-949 STOCKTON			C	
211	2	PRESBYTERIAN CHURCH	925 STOCKTON			B	
211	3	HOP WO BENEV.SOCIETY	913 STOCKTON			B	
211	4		901-907 STOCKTON			C	
211	5		910-914 CLAY ST			C	
211	6		916-920 CLAY			C	
224	2	CHINESE SIX CO.	843 STOCKTON			A	
224	3	GINTJEE BLDG.	833-841 STOCKTON			C	
224	4	VICTORY HALL C.C.H.S	827 STOCKTON			B	
224	5	SCHRODER BLDG.	809-815 STOCKTON			C	
224	6	BROWN BLDG.	801-805 STOCKTON			C	
225	2	YING ON LABOR ASSN.	745 GRANT			A	
225	3		733-741 GRANT			C	
225	4	FLEURY BLDG.	723-729 GRANT			B	
225	5	ONG KO MET ASSN.	717 GRANT			B	
225	6		701 GRANT			B	
225	7		816 SACRAMENTO			C	
225	8	CHINESE BAPTIST CH.	1 WAVERLY PL.			A	
225	13	LEWIS GASNER HOTEL	800-810 STOCKTON			C	
225	14		812-828 STOCKTON			C	<A>
225	16	KUO MING TANG BLDG.	830-848 STOCKTON			C	
225	17	S. SCHEYER BLDG.	850-868 STOCKTON			C	
225	19	J.BAUCHAU ESTATE CO.	857-865 CLAY			C	
225	20	W.E.LOWE BLDG.	843-853 CLAY			C	
225	21		839-841 CLAY			C	
225	22	ENG FAMILY ASSN.	53 WAVERLY PLACE			B	
225	23	NING YUNG BLDG.	41 WAVERLY PLACE			B	
225	24	WONG FAMILY ASSN.	37 WAVERLY PLACE			A	
225	25	CHINESE MASONIC T.	29 WAVERLY PL.			A	
225	28		16 WAVERLY			C	
225	29		18-20 WAVERLY			C	
225	30	TOM FAMILY ASSN BLDG	817-825 CLAY			C	
225	31	CHIN ASSOCIATION	811-815 CLAY			B	
226	1		649-657 KEARNY			C	
226	11	CHINESE CHMBR.OF C.	728 SACRAMENTO			A	
226	12	TOM KING TUCK APTS.	732-734 SARAMENTO			C	
226	13	FOOK CHONG HONG SOC.	736-738 SACRAMENTO			C	
226	14	YEONG WO ASSN.	746 SACRAMENTO			B	
226	17		770 SACRAMENTO			C	
226	18	HOTEL REPUBLIC	700 GRANT			B	
226	21	RIEDMAN BLDG.	777-781 COMMERCIAL			C	
226	23		761 COMMERCIAL			C	
226	24		751 COMMRCIAL			B	
226	25		731-749 COMMERCIAL			C	
226	28		706-712 COMMERCIAL			C	
226	29	MUSTO ESTATE BLDG.	723-727 CLAY			C	
226	30	CHAN BLDG.	728-732 COMMERCIAL			C	
226	31	YATES BLDG.	734-738 COMMERCIAL			C	

TABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

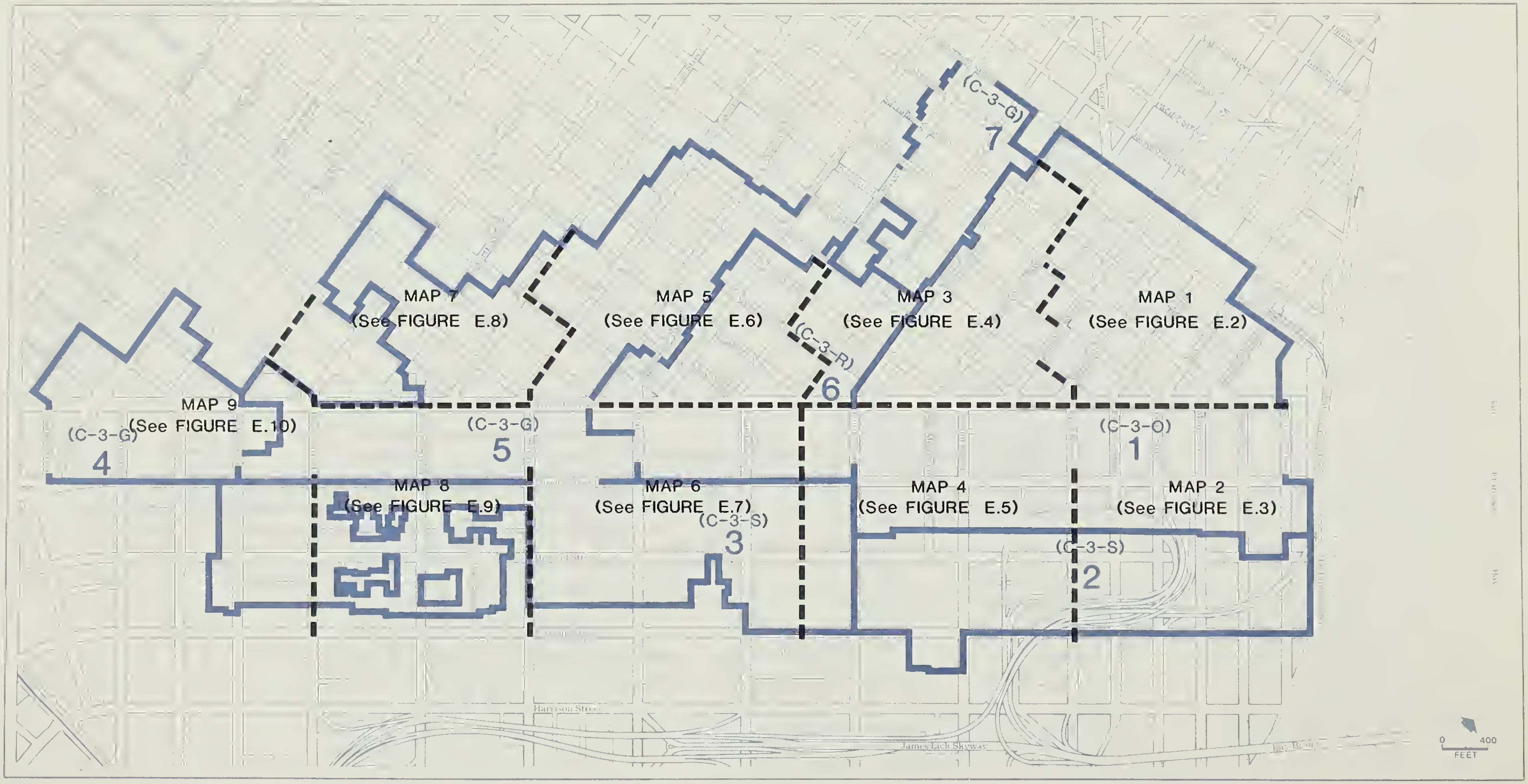
SUBAREA 7 (NORTH C-3-G: CHINATOWN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	[illegible]	N&C	H	NOTES
226	32	THOMPSON BLDG.	740-742 COMMERCIAL			C	
226	33		746 COMMERCIAL			B	
226	34	QUONG FOOK TONG ASSN	754-756 COMMERCIAL			C	
226	36	CHINESE CONSOLIDATED	764-770 COMMERCIAL			C	
226	37		772 COMMERCIAL			B	
226	38	LOWRY ESTATE BLDG.	730-734 GRANT			C	
226	39	CHINESE WORLD	736 GRANT			A	
226	40	STOELZLE BLDG.	742-756 GRANT			C	
226	41	HYMAN BROS. BLDG.	771-783 CLAY			C	
226	42	HIP SING TONG	757 CLAY			B	
226	43	FUN & SON BLDG.	753 CLAY			B	
226	44	M. HOE BLDG.	745-749 CLAY			C	
226	45	MOORE ESTATE BLDG.	735-739 CLAY			C	
226	46	CHARLES BACHMAN BLDG	729-733 CLAY			C	
226	47		713-721 CLAY			C	
226	48		775 COMMERCIAL			C	
226	49		764-768 SACRAMENTO			C	
241	12	OLD ST. MARY'S CH.	680 CALIFORNIA		X	A	
241	14	CARTER INVESTMENT CO	616-626 GRANT			C	
241	15		654 GRANT			B	
241	16		771-777 SACRAMENTO			C	
241	17	KONG CHOW SOCIETY	761-769 SACRAMENTO			C	
241	18	NAM KUE SCHOOL	755 SACRAMENTO			B	
241	19	HOY PING BEN. ASS'N.	729-731 SACRAMENTO			C	
242	1	FAT BLDG.	655 GRANT			B	
242	2	FAR EAST BAZAAR	631 GRANT			B	
242	3	J.H.LOEBER BLDG.	627-629 GRANT			C	
242	5	CALIF. PHYSICIANS	720 CALIFORNIA			C	
242	13	C.J. KEENAN APTS.	770 CALIFORNIA			C	
242	14	LEESMONT APTS.	790 CALIFORNIA			B	
242	16	VINCENT FASSIO APTS.	730 STOCKTON			C	
242	17		738 STOCKTON			C	
242	18	PELISSICO APTS.	750-752 STOCKTON			C	
242	20		891-897 SACRAMENTO			C	
242	22		4 BROOKLYN PLACE			C	
242	23	FONG BLDG.	10 BROOKLYN PLACE			C	
242	25		883 SACRAMENTO			C	
242	27	CHINESE YMCA	855 SACRAMENTO			A	
242	28	CHINESE HOTEL	819-831 SACRAMENTO			C	
242	29	CHINESE DAILY POST	809 SACRAMENTO			B	
242	30	CHIN PECK CO. APTS.	875 SACRAMENTO			C	
242	55	SING CHONG BLDG.	601 GRANT			A	
257	1	SING FAT CO.	555 GRANT			A	
257	2	A. CROCKER BLDG.	531-545 GRANT			C	
257	3	RUEF BLDG.	523-527 GRANT			C	
257	5	SAM ALTSCHULER BLDG.	519-521 GRANT			C	
257	7		20-24 VINTON CT.			C	
257	9	M.LACOSTE HOTEL	614 PINE			B	

ABLE E-3: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT

UBAREA 7 (NORTH C-3-G: CHINATOWN SUBAREA)

BLOCK	LOT	NAME (IF ANY)	ADDRESS	DP	N&C	H	NOTES
257	11	HENCH APTS.	626 PINE			C	
257	12	COGSWELL COLLEGE	600 STOCKTON	1		A	<G>
258	12	NEAL BLDG.	500 GRANT			C	
258	13	TAI CHONG	506 GRANT			B	
258	14	MCKOWEN BLDG.	512-520 GRANT			C	
258	15	OLD SHANGHAI LOW	522 GRANT			C	
258	16	HENRY FROHMAN BLDG.	528-532 GRANT			C	
258	17	SUGLIELMONI BLDG.	540-542 GRANT			C	
258	18		544-548 GRANT			C	
258	19	MARSICANO BLDG.	550-552 GRANT			C	
258	20	FRANKS & SWIFT BLDG.	558-560 GRANT			C	
258	21	CITY OF SHANGHAI	562-574 GRANT			C	
270	9	OLD FIREHOUSE	466 BUSH	1	X	A	<BG>
270	11	FRIEDMAN HOTEL	400 GRANT			A	
270	12	HERMAN HESKINS BLDG.	420 GRANT			C	
270	13	O'BRIEN BLDG.	428-430 GRANT			C	
270	14	R.J.O'BRIEN BLDG.	434-440 GRANT			C	
270	15	ROTH ESTATE BLDG.	444 GRANT			C	
270	16	KIM BLDG.	450 GRANT			B	
270	32	PACIFIC TELEPHONE	430 BUSH	4		C	
271	1	NEW SHANGHAI LOW	437-455 GRANT			B	
271	2	SHELBY BLDG.	433 GRANT			C	
271	3		425 GRANT			B	
271	4	FRANK & SWIFT BLDG.	417-419 GRANT			C	
271	5	ASTORIA HOTEL	502 BUSH			B	
271	11	NOTRE DAME VICTOIRE	2B CHATHAM PLACE			C	
271	12	NOTRE DAME VICTOIRE	564 BUSH	1		A	
271	13	NOTRE DAME VICTOIRE	566 BUSH	3		B	
271	27	GREAT WESTERN POWER	530 BUSH	2		B	
286	2	HOME TELEPHONE CO.	333 GRANT	1	X	A	<G>
286	22	TERBUSH BLDG.	515-519 BUSH	4		C	
287	17	BEVERLY PLAZA HOTEL	334-352 GRANT	4		C	
287	18	MFG. JEWELERS BLDG.	461-463 BUSH	4		C	
287	19	LE CENTRAL	453-455 BUSH	4		C	
287	20	HANSA HOTEL	447 BUSH	4		C	
287	25	TELEPHONE BLDG.	445 BUSH	1		A	<G>



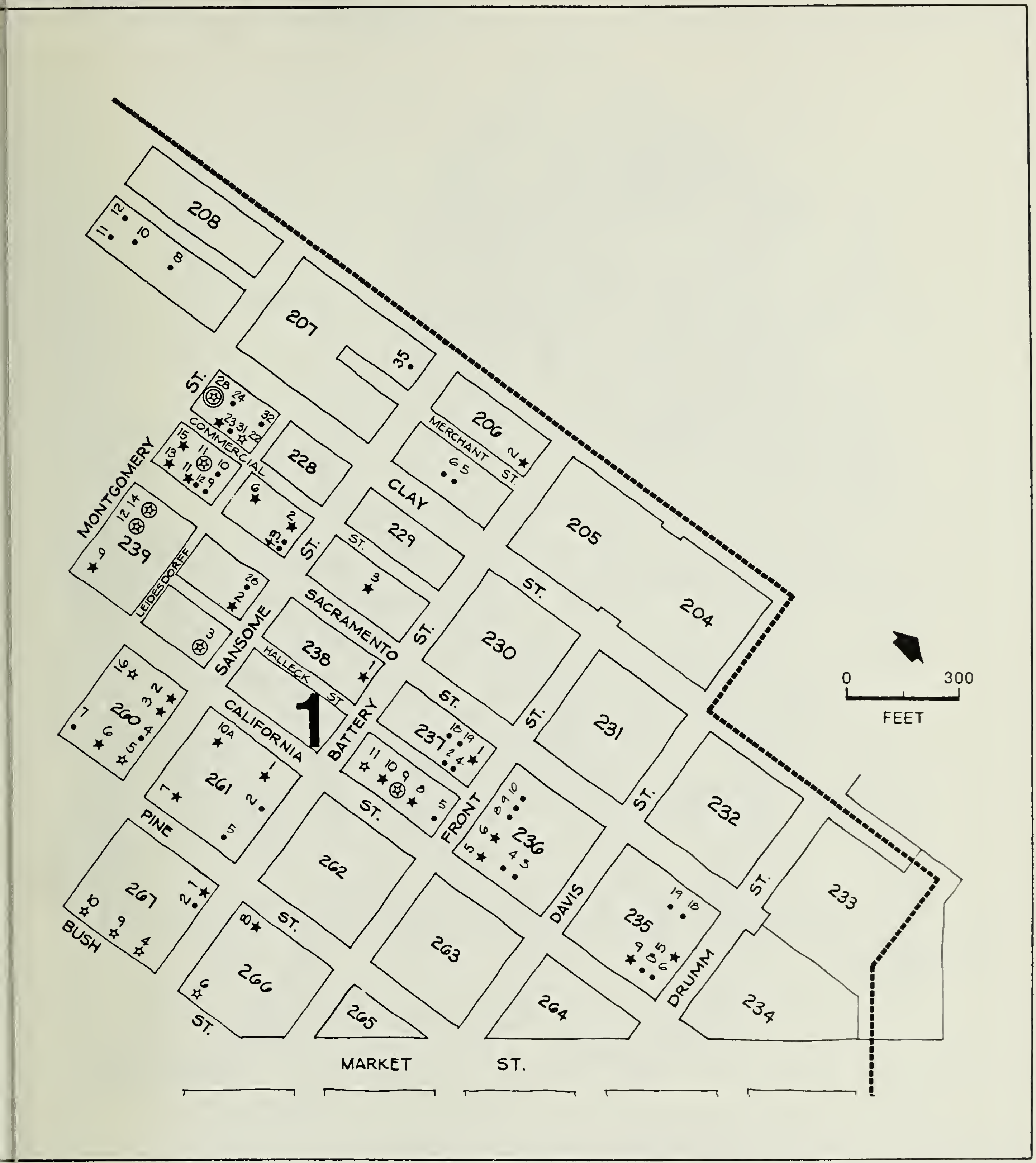
NOTE

Existing Use Districts are shown in blue.

See Table III.1 for explanation of Use District symbols

FIGURE E.1:
DESIGNATED ARCHITECTURAL RESOURCES REFERENCE MAP

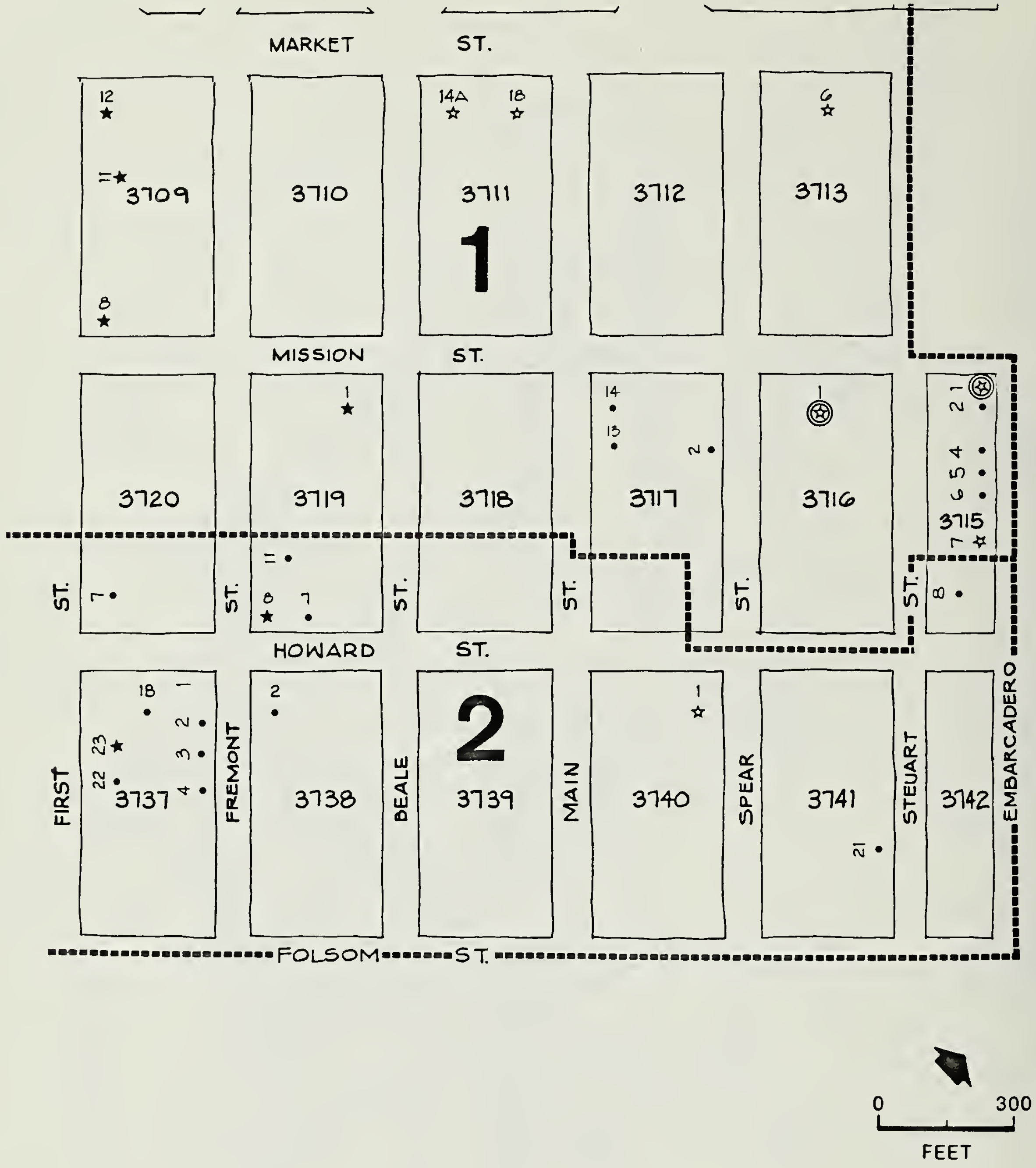
SOURCE Roger Owen Boyer and Associates



NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.2:
DESIGNATED ARCHITECTURAL RESOURCES
MAP 1

SOURCE: Roger Owen Boyer and Associates

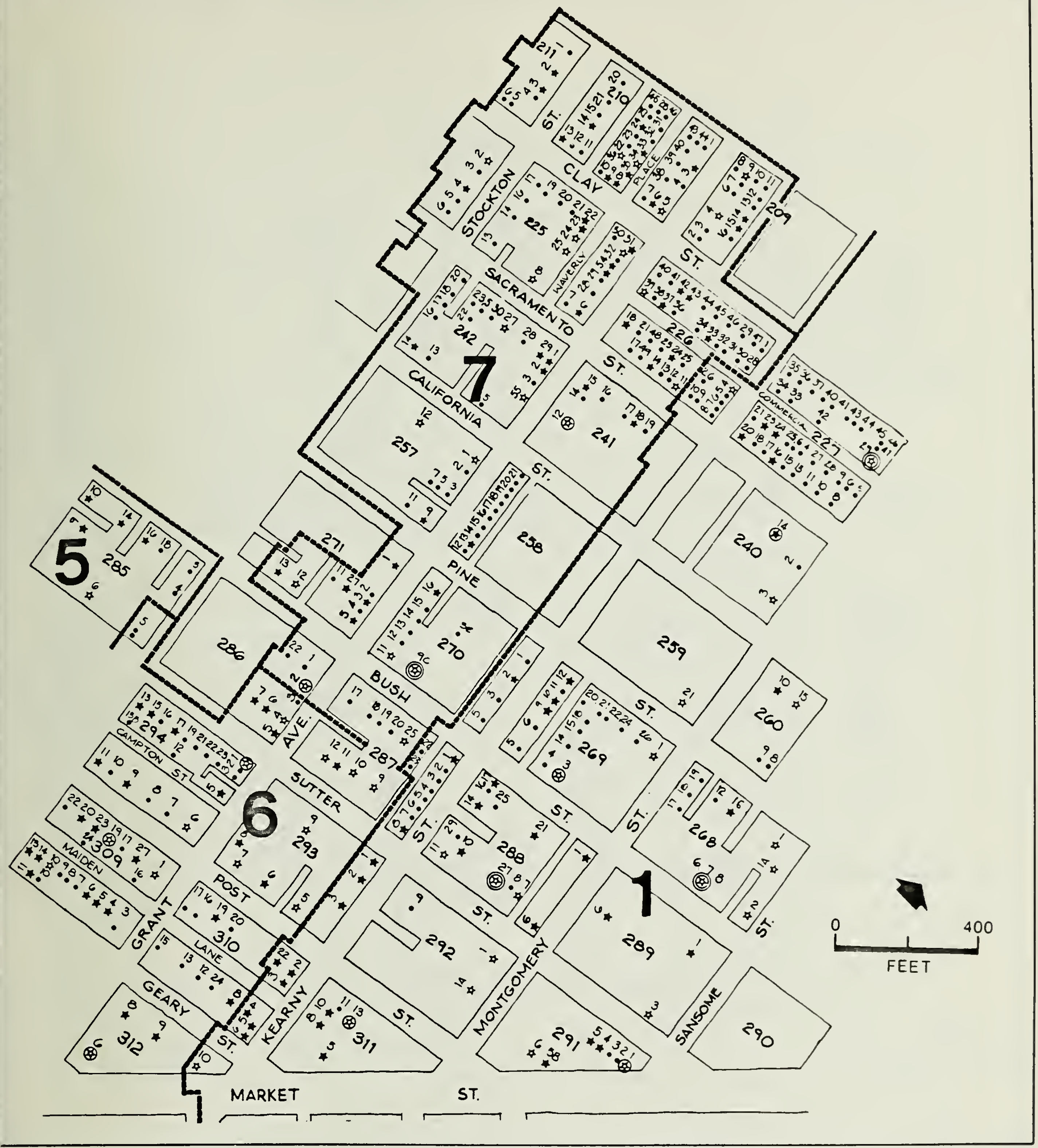


5	EIR Subarea
266	Block Number
129	Lot Number
☆	Heritage 'A'
★	Heritage 'B'
●	Heritage 'C'
⊛	National Register of Historic Places
⊛	City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.3:
DESIGNATED ARCHITECTURAL RESOURCES
MAP 2

SOURCE: Roger Owen Boyer and Associates

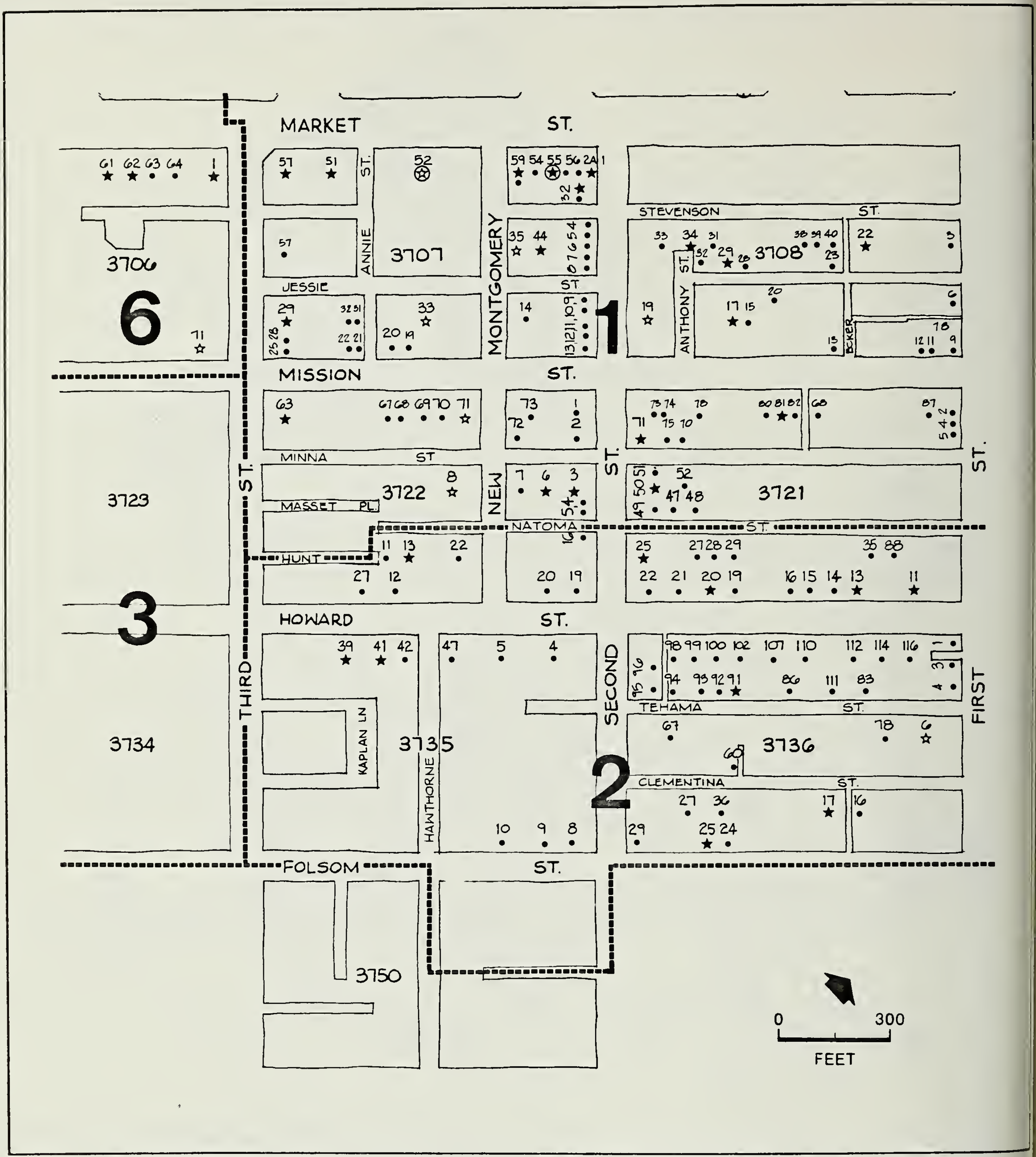


5	EIR Subarea
66	Block Number
29	Lot Number
☆	Heritage 'A'
★	Heritage 'B'
●	Heritage 'C'
◎	National Register of Historic Places
⍟	City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.4:
DESIGNATED ARCHITECTURAL RESOURCES
MAP 3

SOURCE: Roger Owen Boyer and Associates

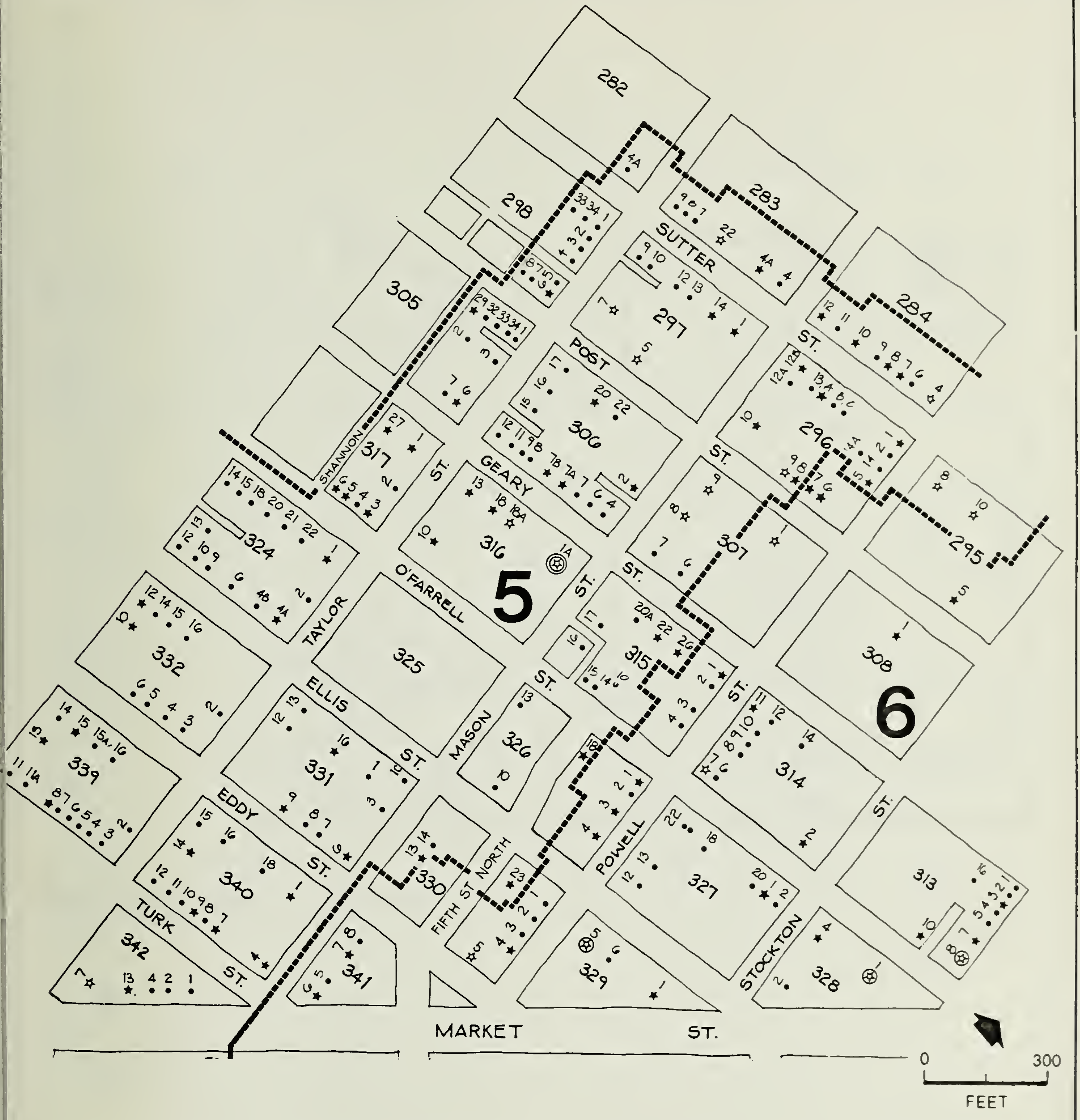


5	EIR Subarea
266	Block Number
129	Lot Number
☆	Heritage 'A'
★	Heritage 'B'
●	Heritage 'C'
⊛	National Register of Historic Places
⊛	City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.5: DESIGNATED ARCHITECTURAL RESOURCES MAP 4

SOURCE: Roger Owen Boyer and Associates



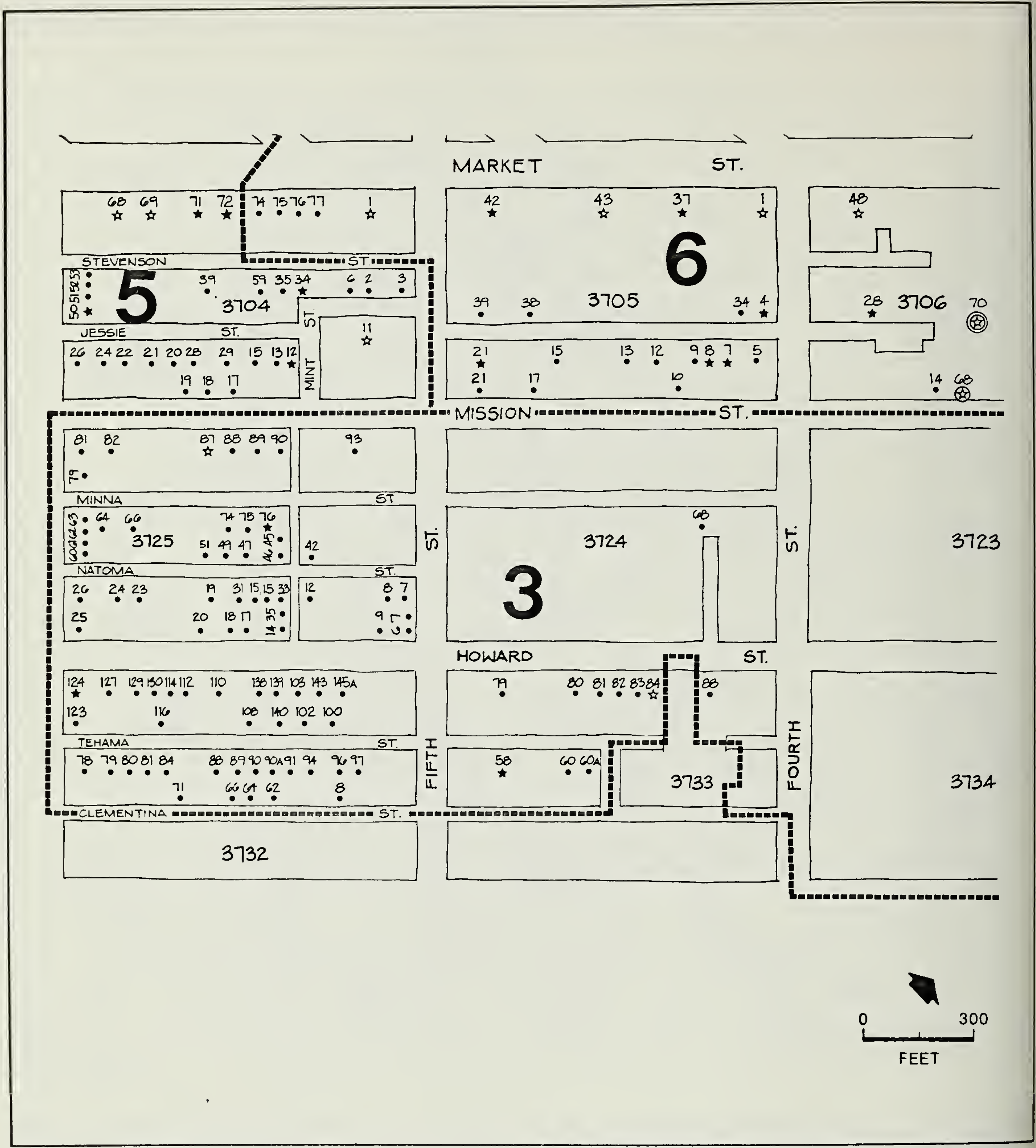
5	EIR Subarea
66	Block Number
129	Lot Number
☆	Heritage 'A'
★	Heritage 'B'
●	Heritage 'C'

⊛	National Register of Historic Places
✪	City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.6:
DESIGNATED ARCHITECTURAL RESOURCES
MAP 5

SOURCE: Roger Owen Boyer and Associates

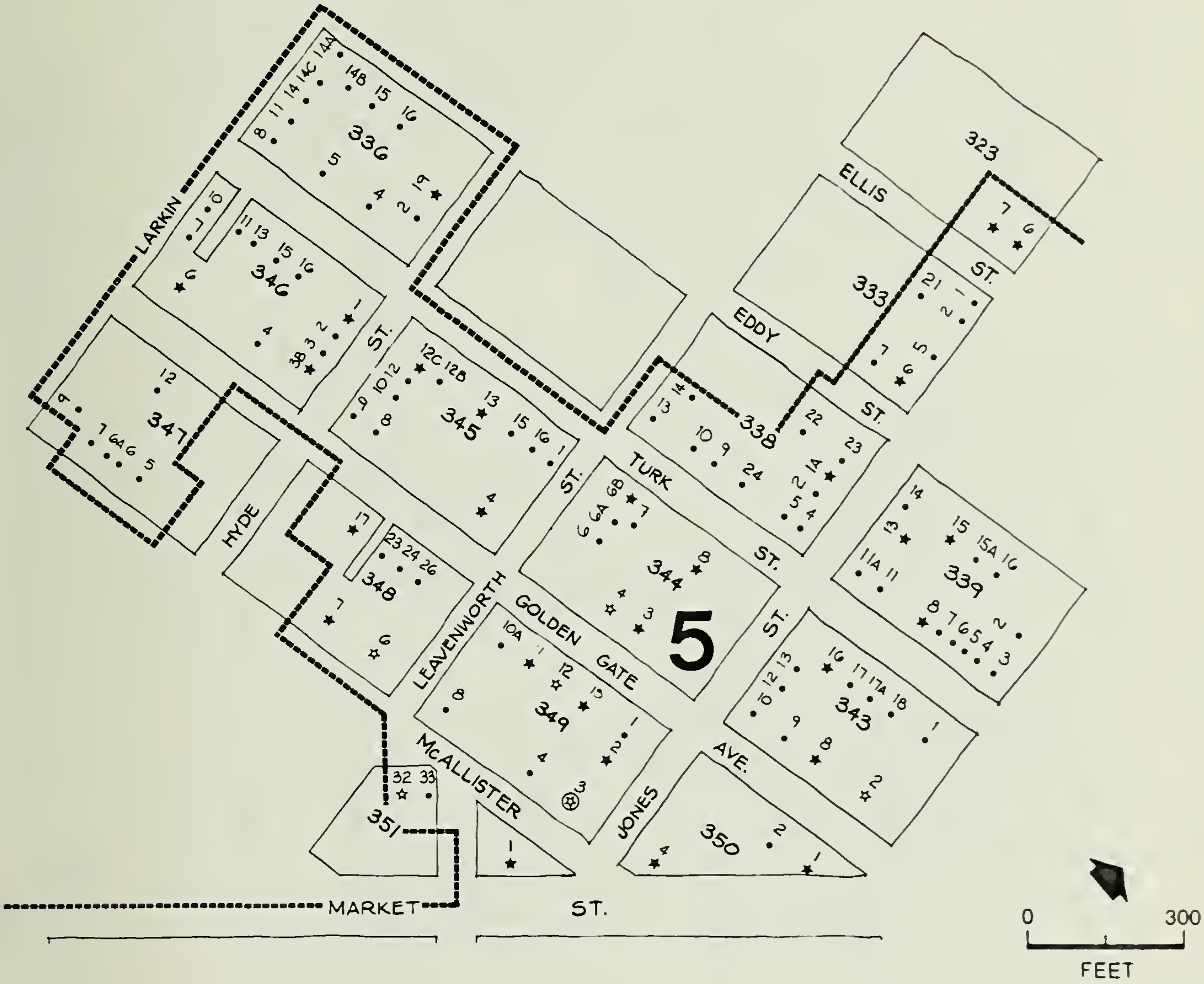


5	EIR Subarea
266	Block Number
129	Lot Number
☆	Heritage 'A'
★	Heritage 'B'
●	Heritage 'C'
⊛	National Register of Historic Places
⊛	City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.7:
DESIGNATED ARCHITECTURAL RESOURCES
MAP 6

SOURCE: Roger Owen Boyer and Associates



EIR Subarea

Block Number

Lot Number

Heritage 'A'

Heritage 'B'

Heritage 'C'

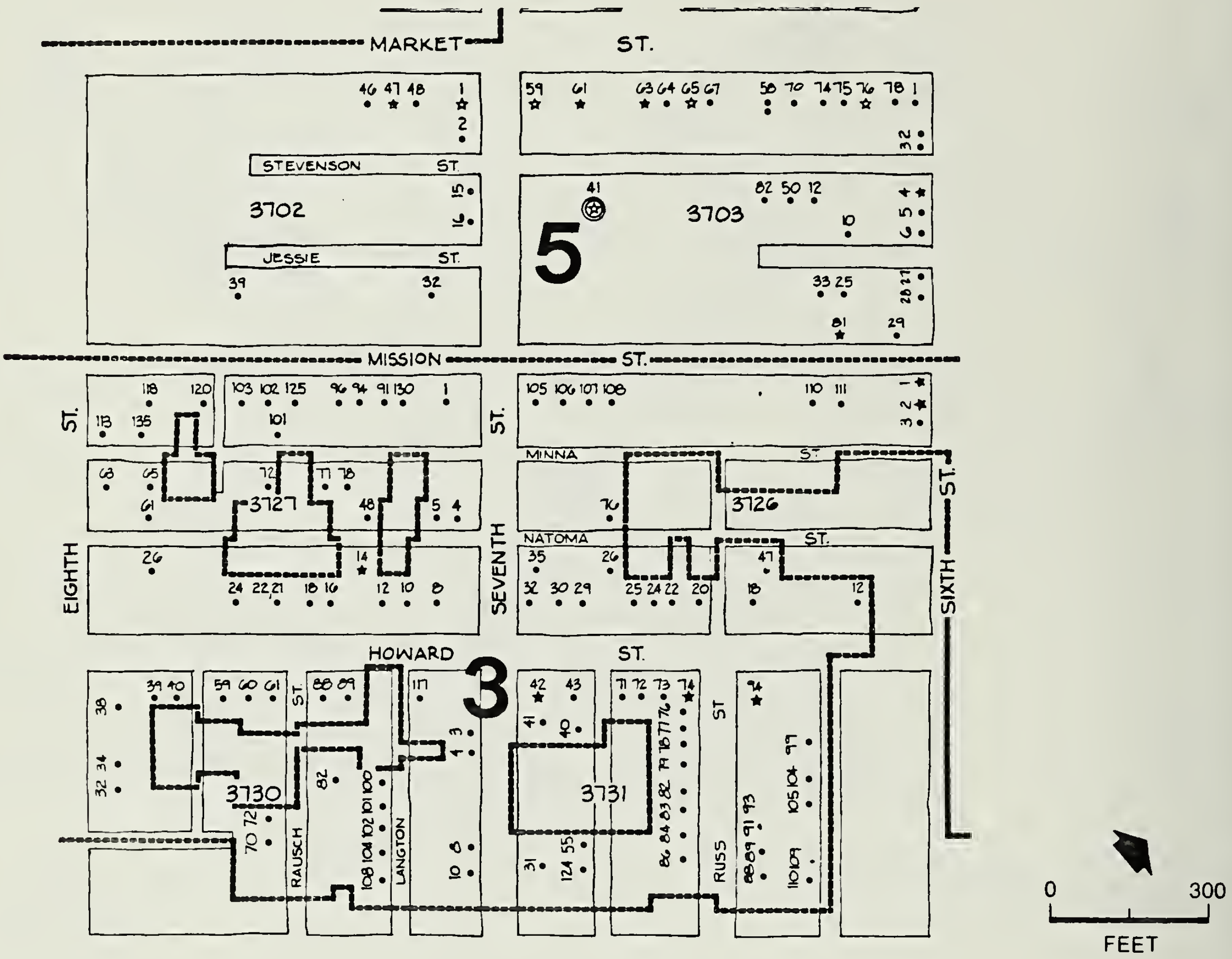
◎ National Register of Historic Places

☆ City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.8:
DESIGNATED ARCHITECTURAL RESOURCES
MAP 7

SOURCE: Roger Owen Boyer and Associates



¦5¦ EIR Subarea
266 Block Number
129 Lot Number
☆ Heritage 'A'
★ Heritage 'B'
● Heritage 'C'

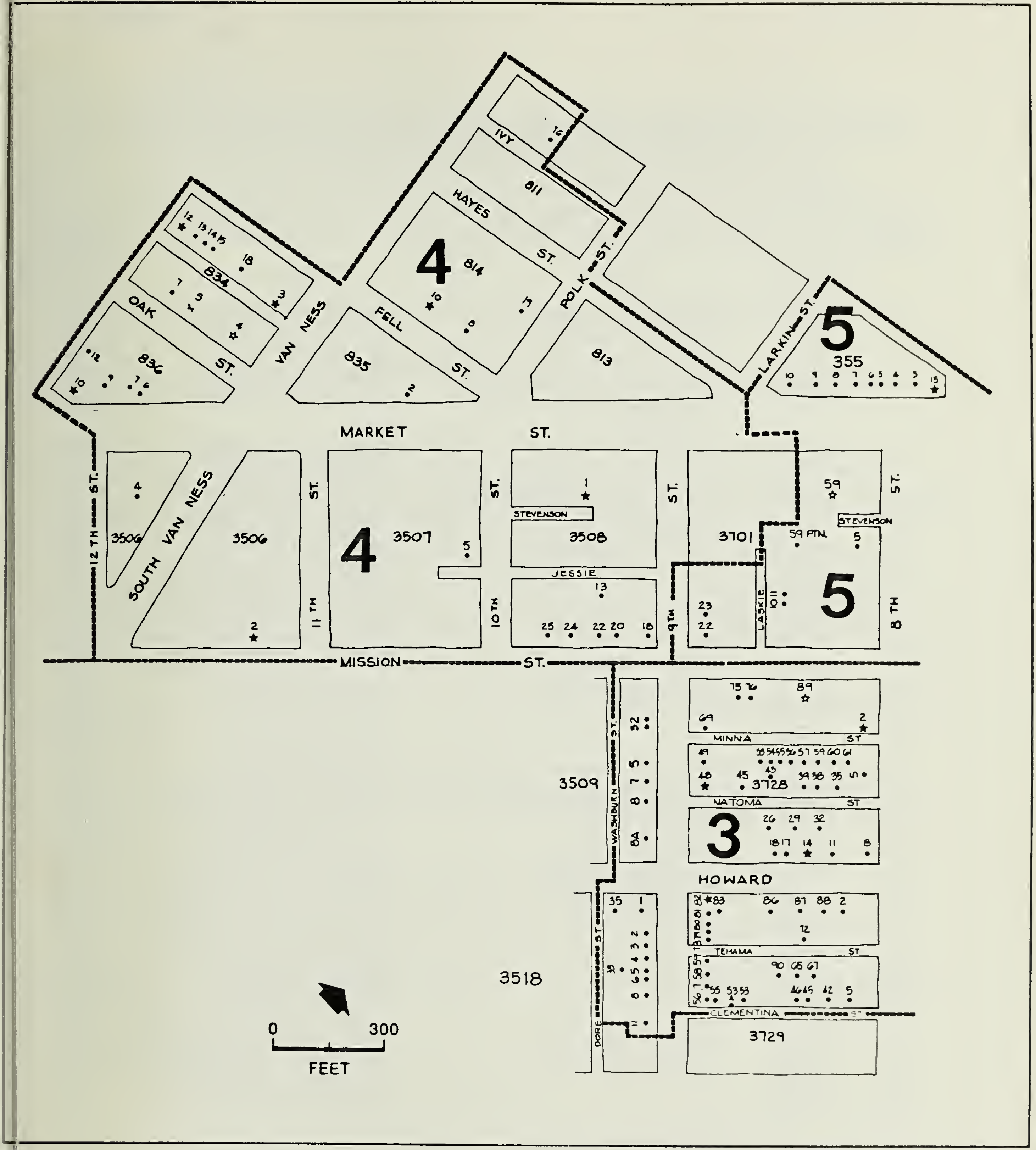
◎ National Register of Historic Places

✪ City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.9:
DESIGNATED ARCHITECTURAL RESOURCES
MAP 8

SOURCE: Roger Owen Boyer and Associates



5	EIR Subarea
66	Block Number
29	Lot Number
☆	Heritage 'A'
★	Heritage 'B'
●	Heritage 'C'
◎	National Register of Historic Places
✪	City Landmark

NOTE: The name, address and other data for each building shown above are presented in Table E.3

FIGURE E.10: DESIGNATED ARCHITECTURAL RESOURCES MAP 9

SOURCE: Roger Owen Boyer and Associates

TABLE E.4: RECOGNIZED ARCHITECTURAL RESOURCES IN THE C-3 DISTRICT DEMOLISHED 1979 THROUGH OCTOBER 1982

BUILDINGS TOTALLY DEMOLISHED:

	Block/Lot	Name	Address	Heritage/ DCP Rating
1	237/15	White & Co. Building	280 Battery Street	B/-
2	289/4	Holbrook Building	58-64 Sutter Street	B/3
3	329/2	Sommer & Kaufmann Building	838 Market Street	A/3
4	3709/4	Yawman-Erbe Building	50 Fremont Street	B/-
5	329/2A	Hart, Schaffner & Marx Building	840 Market Street	B/3
6	3709/7	-	418 Mission Street	C/-
7	3709/10	Golden Gate Building	51-63 First Street	C/-
8	292/6	Thomson & Orman Building	110-116 Kearny Street	C/-
9	292/8	White Building	120-130 Kearny Street	B/-
10	292/4	Foxcroft Building	68-82 Post Street	B/-
11	237/16	-	353 Sacramento Street	B/-
12	288/5	-	109-123 Montgomery Street	C/-
13	288/4	Wilson Building	125-129 Montgomery Street	C/-
14	288/3	-	133-137 Montgomery Street	C/-
15	288/2	Steil Building	141 Montgomery Street	B/-
16	263/2	Oceanic Building	Two Pine Street	B/-
17	263/4	Kirkham Building	64-70 Pine Street	C/-
18	263/5	-	124 Front Street	C/-
19	263/6	-	136 Front Street	C/-
20	263/7	Isuan Building	140 Front Street	C/-
21	263/8	Commercial Building	146-150 Front Street	C/-
22	313/14	City of Paris	199 Geary Blvd.	A/-
23	313/15	Whitney Building	133-153 Geary Blvd.	B/-
24	295/7	Fitzhugh Building	364-384 Post Street	A/-
25	3712/25	Young Building	101-105 Market Street	B/-
26	3712/20	Lincoln Hotel	115-121 Market Street	C/-
27	3712/19	-	125-131 Market Street	C/-
28	3712/16	-	9-23 Main Street	C/-
29	269/2	-	334 Bush Street	C/-
30	269/2A	-	344 Bush Street	C/-
31	3703/66	Forrest Building	1053-1055 Market Street	A/-
32	223/32	Powell Cinema	35-41 Powell Street	C/-
33	208/2	-	643 Montgomery Street	C/-
34	3724/14	-	820 Howard Street	-/3

BUILDINGS PARTIALLY DEMOLISHED:

	Block/Lot	Name	Address	Heritage/ DCP Rating
35	289/31	Anglo & London Paris Bank	One Sansome Street	A/5
36	239/12	A. Borel & Co. Building	440 Montgomery Street	A/-
37	239/14	Italian-American Bank	460 Montgomery Street	A/-

SOURCE: Landmarks Preservation Advisory Board and Roger Owen Boyer & Associates

NOTES - Appendix E

/1/ Members of the advisory review committee include John Beach, Architectural Historian; Michael Corbett, Architectural Historian; John Frisbee, Regional Director, National Trust for Historic Preservation; Mrs. G. Bland Platt, former President, San Francisco Landmarks Preservation Advisory Board; James Ream, Architect; Judy Waldhorn, Architectural Historian; Francis Whisler, Architect; Sally Woodbridge, Architectural Historian; William Coburn, Architect; Robert Hersey, Architect; Al Lanier, Architect.

/2/ San Francisco Department of City Planning, map entitled 1976 Architectural Inventory.

/3/ The Foundation for San Francisco's Architectural Heritage, Splendid Survivors, San Francisco, 1979.

/4/ Three independent outside professionals were invited to review the results. The reviewers were Randolph Delehanty, an urban historian at Heritage, with specialized knowledge of San Francisco and its architecture; Jeremy Kotas, an architect in the Urban Design section of the San Francisco Department of City Planning, who was responsible for the Department's citywide 1976 Architectural Inventory; and Joan Draper, an architectural historian particularly familiar with San Francisco's post-fire architecture, formerly at the University of California at Berkeley, and now an Assistant Professor in the School of Architecture at Montana State University. The procedure used in the formal review reinforced the objectivity of the evaluation, and explained any adjustments made.

/5/The Foundation for San Francisco's Architectural Heritage. Splendid Survivors, (1979, pages 12-13).

/6/ The evaluators in this phase were Randolph Delehanty, Jeremy Kotas and Sally Woodbridge, each of whom reviewed every file, and Paul Groth, Bruce Judd, John Liu, and Christopher Yip, who reviewed portions of the files about which they were particularly knowledgeable.

/7/ City and County of San Francisco, Planning Code, Section 10.01, 1979.

/8/ San Francisco Planning Commission Resolution No. 8600, May 29, 1980.

/9/ City and County of San Francisco, Department of City Planning, Guiding Downtown Development, July 1982.

/10/ Downtown Plan, p. 66.

APPENDIX F: EMPLOYER AND EMPLOYEE SURVEYS: METHODOLOGY AND PROCEDURES

Two surveys were conducted to gather information used in the assessment of growth management alternatives for downtown San Francisco. The surveys were the basis for describing existing C-3 District employment and workforce characteristics, including residence and transportation patterns. They provided background for the employment forecasts and were used to assess the effects of the Downtown Plan and Alternatives on future job opportunities and the characteristics of the downtown workforce.

The two surveys, referred to as the Downtown EIR Employer and Employee Surveys, were conducted in 1982. The total sample included 3,367 employees in 58 different establishments (employers), all located in the C-3 District. The Employer Survey was a confidential personal interview conducted by the consultants with a senior executive or manager at each establishment selected. The Employee Survey was a self-administered questionnaire distributed to employees at these same establishments. Because information was gathered from both employers and their employees, this study of the C-3 District could establish important distinctions in the characteristics of workers employed in different business activities.

A complicated sampling design, involving a multi-stage cluster sample and sample stratification to allow comparative analysis among relevant subgroups, was used for these surveys. The sampling methodology enabled the important linkage of types of businesses and employment to types of space. This sampling design, however, results in sample units that have unequal probabilities of selection. It is not a simple random sample. Therefore, analysis of survey data to derive unbiased estimates of the characteristics of the total C-3 District workforce requires weighting the responses of both sample establishments and sample employees. The sample weights may be interpreted as the relative numbers of establishments and employees in the C-3 District that each sample unit represents.

Confidence limits at the 95 percent level of confidence were calculated for several important variables used in the C-3 District analyses. For example, the confidence limits for the proportion of C-3 District employees who live in San Francisco was calculated to be ± 3 percent. This statistic means that there is a 95 percent certainty that the proportion estimated from the weighted sample data is within three percent (in either direction) of the actual proportion. Similar statistics confirm the high degree of accuracy in the survey estimates from the weighted responses of the entire sample.

A detailed discussion of the methodology and procedures used in the Downtown EIR Surveys has been prepared for the earlier study "Growth Management Alternatives for Downtown San Francisco: Downtown EIR Consultant's Report", and appears there as Appendix F. The appendix describes survey administration, sample design, sampling procedure, and weighting the sample responses. It also discusses uses of the survey results and compares the Employer and Employee Surveys to other recent surveys and data sources. The results of the surveys have been incorporated into each subject area of the C-3 District analysis to which they apply: Business and Employment, Residence Patterns and Housing, and Transportation. Appendix F of the Downtown EIR Consultant's Report is hereby incorporated by reference into this EIR.

APPENDIX G: LAND USE AND REAL ESTATE DEVELOPMENT ANALYSIS

INTRODUCTION

The land use and real estate development analysis is the basis for translating land use and zoning policies into forecasts of new development and changes in land use and business activity. The policies of the proposed Downtown Plan and the Alternatives directly affect development costs, the size of buildings, and the availability of sites for development.

For the Plan and each Alternative, the degree to which these cost and supply factors would change was evaluated. Next, the real estate analysis considered the implications of these changes for development feasibility and, through this, on the likely amount and timing of the potential supply of space in the C-3 District. Then, using the forecast of employment growth (demand for space) in the C-3 District, the analysis considered how demand would respond to changed supply conditions. The result was the 2000 forecast of future space use and development in the C-3 District for the Plan and each Alternative.

This Appendix provides background for the Downtown Plan land use and development forecasts (changes in occupied space by land use category) that are presented in Section IV.B, Land Use and Real Estate Development Impact. There are four sections to the Appendix: (1) Real Estate Analysis/Potential Supply of Space, (2) Forecasting C-3 District Office Space, (3) Other Aspects of the Land Use and Real Estate Analysis, and (4) Supplemental Tables and Maps for the Land Use and Real Estate Development Analysis. The first section outlines the key elements in the analysis of C-3 District space supply potentials under the policies of the Downtown Plan. Office development is the primary target of the Plan policies and, thus, of this analysis. The second section describes the process of forecasting occupied office space, focusing on consideration of real estate market adjustments to land use policy changes. Other topics raised in the land use and real estate development sections of the EIR are discussed in the third section. These include analyzing open space requirements; determining other uses in office buildings; forecasting development of retail, hotel, and other types of space; and estimating conversions and demolition. The supplemental tables are a complete set of tables showing detailed land use information for the C-3 District, 1981 to 2000, for the Downtown Plan and the five Alternatives.

Appendix G in the Downtown EIR Consultant's Report (hereinafter referred to as the Consultant's Report) provides background on the real estate feasibility analysis of the five Alternatives and includes detailed discussion of the various preservation incentives and housing policies of the Alternatives./1/ In cases where the methodology used to forecast the effects of the Downtown Plan is essentially the same as that used for analysis of the Alternatives, Appendix G in this EIR makes reference to the detailed description in the Appendix G in the Consultant's Report and briefly describes the factors relevant to the Downtown Plan forecast. Appendix G of the Consultant's Report is hereby incorporated by reference into this EIR.

REAL ESTATE ANALYSIS/POTENTIAL SUPPLY OF SPACE

Opportunity Sites

The real estate analysis determines how the policies of the Plan would affect the economics of real estate development in the C-3 District. Policies regarding the design, size, height, bulk, location, and cost of new buildings affect the feasibility of new development. The real estate analysis of the Downtown Plan required a variation of the approach used in the Consultant's Report to determine the effects of the five Alternatives. For the analysis of the Alternatives, a limited number of prototype buildings were devised that could be assumed to satisfy design and zoning requirements in different portions of the C-3 District. For the Downtown Plan it was more difficult to accurately generalize about the effects of the rules that would govern new development and, thus, more difficult to design general prototypes. In addition to height, bulk and FAR requirements, the Plan includes other building design criteria, such as mandatory streetwall setbacks and sun access, which have different applications in different locations, making generalized prototypes inappropriate for this analysis. Therefore, the approach to the analysis of the Downtown Plan policies was to select the most likely development sites and to determine how much new development would be allowed on these sites, under the applicable policies of the Plan.

The likely development sites are referred to as "opportunity sites". A few generalized rules that were consistent with the prime feasibility situations identified in the previous analysis of the Alternatives and with the new conditions of the Downtown Plan were used to select opportunity sites. The criteria included the size of the site (one lot or contiguous lots) and the size of existing buildings on the site. In addition, no lots with Category I or II rated buildings or lots from which development rights had been transferred were selected. No lots with relatively new (post-1965) major projects were selected, even if the site satisfied all the other criteria. The opportunity sites represent the pool of sites with the greatest likelihood of being developed within a period of about 20 to 30 years after projects already approved have been built./2/

Detailed analysis of opportunity sites was carried out for the C-3-0 (Subarea 1), the C-3-0(SD) (Subarea 2), and the C-3-R (Subarea 6) use districts. These are the areas where the majority of development activity in the C-3 District is forecast to occur before the year 2000 and also the areas where the Plan's policies are most specific and most interdependent (in terms of the Plan's stated goal to redirect downtown office expansion from north of Market Street to Subareas 1 and 2 south of Market Street).

Review of the Downtown Plan policies indicated that no special incentives were proposed to encourage development in the more outlying subareas (Subareas 3, 4, and 5, encompassing the C-3-S and C-3-G use districts)./3/ In fact, the opportunities for major new development would be limited due to downzoning in certain areas and lowered height limits./4/ Because of the relatively small development potential of these areas by 2000 and the Plan's emphasis on shifting development to the east, and south of Market Street (and not in the direction of these subareas), the forecast methodology for Subareas 3, 4, and 5 was the same as that used for the Alternatives, rather than a detailed analysis of opportunity sites.

Estimating Maximum Development Potential

For a given site, it is possible to estimate the maximum amount of new development that could occur there, under the rules of the Downtown Plan. Appendix D, Construction Feasibility Analysis, explains how the policies of the Plan were used as parameters for estimating the space in new buildings on the opportunity sites. Briefly, the Plan policies that guide the overall size and design of new construction on any C-3 District site fall into the following categories:

- height and bulk (including base, lower tower and upper tower controls)
- setbacks
- building appearance
- open space
- mandatory sunlight access
- rated historic buildings and conservation districts

These rules were applied to each opportunity site to estimate the total amount of new space that could potentially be supplied on all opportunity sites. Neither the base FAR nor the use of TDRs was considered in this first stage of the analysis. As will be demonstrated below, calculation of the potential space that would be allowed regardless of base FAR was a critical element in measuring the demand for TDRs.

The Likelihood of Developing to the Maximum Potential

Physical constraints (what the site conditions and size and design controls of the Plan would allow) are not the sole determinants of what would be built on opportunity sites. The real estate analysis considered a number of other factors affecting the size of new buildings.

- Site coverage. Would a typical new building cover 100 percent of the lot area? Most major new buildings constructed under the Planning Code rules that offered bonuses for plazas did not cover 100 percent of their sites. The Plan policies reverse this incentive with open space requirements that must be satisfied by "usable" and "accessible" on-site or off-site open space. Some open space would be provided on-site in the form of plazas in suitable locations. (The open space requirements are discussed in more detail later in this Appendix). Providing through-block alleyways would reduce site coverage in some cases. Aesthetic preferences, such as the desirability of a plaza regardless of whether it is counted as open space, may also reduce the overall percentage of the sites that would be built on. Because of these factors, new buildings, on average, would cover less than 100 percent of their sites. This would reduce the maximum potential development on the opportunity sites.

- Parcel agglomeration. The opportunity sites consisted of one lot or several contiguous smaller lots. Most of the opportunity sites would require assembling two or more parcels. If this did not take place, then, in some cases, new development would not occur because the individual parcels would be too small to efficiently accommodate new construction. In other cases, the total new development potential on a portion of an opportunity site would be smaller than the potential on the complete site, because the site conditions would no longer be sufficient to maximize the amount of development allowed under the Plan. To the extent that site combinations do not occur, then the amount of new space on the developed sites would be smaller than the maximum estimated for the opportunity sites.

- Sun access criteria. Some of the sun access angles specified in the Plan are not mandatory (see Plan, Table 12, p. 100 and Map 15, p. 101 and accompanying text). These building design criteria were not considered in the estimate of maximum potential space on opportunity sites. (The mandatory sunlight access criteria for sidewalks and open space and the shadow study requirements were accounted for in the construction feasibility analysis. See Appendix D for more detailed discussion.) The sun access angles would affect the size of buildings that could be developed along some streets, particularly the south sides of Mission and Howard Streets. If the sun access angle criteria were applied to the estimates of maximum potential space on opportunity sites in these areas, the maximum amount would be smaller.

- TDR program. The size of new buildings in the C-3 District under the Plan would depend on the effectiveness of the proposed TDR program. Unless the developer purchased TDRs, non-residential buildings would be limited in size to the base FAR. With TDRs, buildings could be built to the height and bulk limits, respecting other design and open space criteria as well. The purchase of TDRs would not adversely affect the feasibility of construction if the demand for space (expressed through rents) justified the construction of more space and a taller building (see discussion of feasibility below). The need to purchase TDRs would add at least one more transaction to the building development process, however. Developers of large buildings would experience the most difficulty if they had to assemble TDRs from several rated buildings to complete the project. It would also take some time for the program to be accepted by property owners and developers, for the TDR market to be established, and for any legal and administrative procedures to be worked out. The actual amount of development would be smaller than the maximum estimated for the opportunity sites to the extent that developers decided either to build without purchasing TDRs, or to purchase less than the maximum they could use.

- Economic feasibility. The feasibility of new office development under the policies of the Plan was tested for a variety of situations in the C-3-0 and C-3-0(SD) use districts. The real estate feasibility model used was similar to the model, described in Appendix G of the Consultant's Report, that was used to analyze the five Alternatives./5/ The purpose of the real estate feasibility calculations was to assess the relationship between development costs and rents in various locations. The results indicate the relative feasibility of larger versus smaller buildings in different locations.

There are several building design requirements of the Plan that would increase basic square footage construction costs for new office buildings. Depending on the size of the building, average per square foot construction costs under the Plan would be six to 10 percent higher than they would be for a typical box-shaped office tower./6/ Higher development costs have different effects on the feasibility of new construction in different locations, depending on the rents in each location. The desirability of developing larger vs. smaller buildings is also sensitive to construction costs.

Development situations in various C-3-0 and C-3-0(SD) locations were assessed at current rents. This analysis also indicated how much current average rents in certain locations would have to increase to justify new construction of large buildings. Feasibility analysis for the 1990-2000 period indicated that new buildings constructed in some locations would be smaller than the maximum estimated for the opportunity sites in these areas.

The analysis of the C-3-0(SD) district is a good example of the conclusions that can be drawn from the real estate feasibility calculations. Current market rents in this area are relatively low, and will only increase gradually over time as expectations for the area and its image change. Construction costs under the Plan (for highrise development using TDRs) would be as high as in the established prime office rent area. The analysis indicated that smaller buildings than the height and bulk limits would allow would be built in the C-3-0(SD) until rents had increased enough to provide acceptable return on taller highrise projects.

All of these factors indicated that the maximum potential development, estimated in the construction feasibility analysis on the basis of site conditions and the building size and design criteria of the Plan, would not be likely to occur on all opportunity sites. The likely development would vary from the maximum depending on the characteristics of the sites actually developed. The likely development would also vary due to differences among sites in the strength of demand for space./7/ Finally, real estate feasibility is not static. The economic feasibility of development in certain locations would change, over time, as space users consider alternative locations. When rents increase, feasibility improves and a larger portion of the maximum potential could be justified on available development sites. Depending on when development occurred, changing market conditions would also contribute to variation from the maximum amount of development on opportunity sites.

The analysis suggested possible assumptions about the amount of development that would be likely on opportunity sites. Sites in the C-3-0 north of Market generally would develop to close to the maximum. Sites in the C-3-0 south of Market would, on average, reach somewhat less of the maximum than those north of Market. Development further south in the C-3-0(SD) would occur at an even lower proportion of the maximum potential. To estimate the potential supply of space under the Plan by 2000 and in the longer term, a range of assumptions was chosen which accounted for both the most likely future development possibilities, and for changes over time in feasibility considerations. Adjustments in real estate feasibility due to changes in the demand for space in certain locations are reflected in the completed development forecasts for the year 2000. The market dynamics behind these adjustments are described later in this Appendix.

TDR Supply and Demand

As explained in Section IV.B., Land Use and Real Estate Development Impact, the TDR policies of the Downtown Plan, (including the designation of four categories of rated buildings with different degrees of preservation requirements or incentives, open space requirements and TDRs, rules for calculating TDRs for existing buildings, what the purchasers of TDRs are allowed to do on their development site and rules governing the sites between which transfers can occur), create a market for TDRs, in which there is both supply and demand.

For the analytical purposes of this EIR, the supply of TDRs from existing buildings was calculated for each rated building according to a few simple rules. The Downtown Plan defines transferable development rights as "the difference between the actual square footage of the building to be retained and the square footage of a new building that could be built on the lot as determined by the applicable floor area ratio."/8/ For each lot containing a rated building, the potential supply of TDRs could be estimated from: existing square footage data supplied in the Downtown EIR Land Use Inventory (see Appendix C), the lot area, and the Plan's proposed base FAR for the lot, which varies by use district./9/ These lot-by-lot estimates were summarized by use district for the overall supply/demand analysis of the TDR program.

In the C-3-0 and C-3-0(SD), an additional adjustment was made to these estimates, reflecting the Plan's policies regarding ground floor retail uses in new office buildings in these areas. To encourage ground floor retail space in new office buildings, the Plan proposes that ground floor retail space not be counted as part of the building floor area from which the controlling base FAR is measured for these use districts./10/ It was assumed that existing buildings could be treated the same way for the purpose of calculating the amount of TDRs available. In other words, ground floor retail and related uses would not be counted towards the "actual square footage of the building to be retained." For example, for a four-story rated building that covered 100 percent of its site with retail uses on the ground floor, the estimate of TDR supply would only count the floor area of the upper three stories. The FAR for the purpose of estimating TDR supply would be 3:1 in this case. In the C-3-0 district, the "applicable floor area ratio" for new development that could be built on a site would be 10:1. Therefore, the estimate of TDRs available in this example would be equivalent to a 7:1 FAR. If the example site were in the C-3-0(SD), where the "applicable floor area ratio" is 6:1, then the estimate of TDRs available would be equivalent to a 3:1 FAR./11/

TDRs would be available to developers who financed the acquisition and/or development of privately-owned open-space areas in the C-3 District. The Plan identifies sites that would be suitable for this purpose in the C-3-0(SD) (Subarea 2)./12/ If they were not used as open space, the Plan would allow new development floor area on these sites up to six times the lot area. (The base FAR in the C-3-0(SD) is 6:1.) This is the amount of TDRs that could be purchased by developers of new highrise structures else- where in the C-3 District. Purchasing these TDRs would also contribute to satisfying the open space requirement for all new non-residential buildings or additions in the C-3 District. (The open space requirement and the means by which it could be satisfied are discussed later in this Appendix.) Open space TDRs are added to the supply of TDRs from rated buildings.

The demand for TDRs is created because the Plan restricts new highrise development in all C-3 use districts to the base FAR, unless TDRs are used (or housing is provided, in the C-3-S and C-3-G use districts). In either case, the height and bulk limits control the size of new buildings. In some parts of the C-3-0(SD), height and bulk limits are set substantially higher than the base FAR, to encourage use of TDRs./13/

The demand for TDRs is calculated from information supplied by the analysis of development potential on opportunity sites. For any one site, the difference between what would be allowed by right and what is likely to be built is the amount of TDRs that that site could use. This number can be interpreted as the amount of TDRs a developer would have to purchase to build a marketable highrise structure on a site. The construction feasibility analysis indicated that most of the opportunity sites could accommodate more space than would be allowed under the base FAR plus any non-counting space such as ground floor retail (in the C-3-0 and C-3-0(SD) districts) and mechanical facilities. To account for the most likely future development possibilities, as well as for changes over time in real estate development feasibility, a range of estimates of the average size of buildings that would be built in various locations was analyzed. Calculating the difference between the amount of space that would be built (a range) and the amount that would be allowed by right (the base FAR, a constant) resulted in a range of TDR demand estimates. Given the uncertainties inherent in the long-term forecasts, the range of TDR demand estimates provided a means of assessing several possible scenarios of future development. The demand estimates were summarized by use district to compare with the TDR supply estimates.

The comparison of TDR demand and supply was important for several reasons. The aggregate estimates provided the basis for conclusions as to how the proposed system would work. The issues addressed by the analysis include the following:

- Would demand in the prime development areas (mostly the C-3-0, Subarea 1) be strong enough to absorb the large supply of TDRs created by preservation requirements and conservation district restrictions in these areas?
- Would overall demand be strong enough to create an incentive to retain Category III and Category IV buildings, the retention of which is not required?
- How much of the demand in the C-3-0(SD) (Subarea 2) would be satisfied with TDRs from the outlying subareas, particularly Subareas 3, 4, and 5. Would there be enough long-term demand to absorb some TDRs from the C-3-0 (Subarea 1)?
- In terms of development feasibility and timing, when would C-3-0(SD) development justify the purchase of C-3-0 TDRs?
- How important are adjustments in the supply of TDRs to the system's effectiveness in achieving the preservation goals of the Plan?
- Would there be any advantages or disadvantages to further regulation of the system?

The results of the supply/demand comparison are discussed in Section IV.B. Land Use and Real Estate Development Impact, and in Section V.B. Land Use and Real Estate Development Mitigation.

FORECASTING C-3 DISTRICT OFFICE SPACE

Overall Matching Process

The product of the real estate analysis was a description of the supply of office space likely to be provided in the C-3 District, considering the location and building size parameters and development costs associated with the Plan, the effectiveness of the TDR system, and how these factors affected project feasibility. The amount of office space developed during any forecast period, however, is not simply a function of what is allowed under the City's zoning regulations. It depends on the demand for office space from the business activities deciding to locate or expand in the C-3 District. A major consideration in this forecasting process is how rents for space are likely to change over time as those seeking space in the C-3 District respond to different supply conditions. Rents cannot be considered without evaluating both demand and supply factors./14/

The underlying demand for space in the C-3 District to the year 2000 is described in this EIR as the baseline forecast. A baseline forecast for each business activity was prepared as part of the employment analysis. (See Appendix H.) The forecast assumes continuation of real estate market conditions that have prevailed since the early 1960's.

The amount and location of projects under construction, approved, and included in the YBC Redevelopment Program reflect these prevailing real estate market conditions. The policies of the Plan would change these conditions through specific actions to redirect the current patterns of office expansion in the C-3 District. The real estate analysis indicated the potential effects of these changes on the costs of development and on the availability of office space in different locations.

The demand for office space was compared with the potential supply of office space to produce a forecast of office development by subarea. The baseline employment forecast for each business activity and function was always the starting point. The projected response of different business activities to the space supply conditions of the Plan resulted in the space development and employment forecasts for the Plan. The sensitivity of the business activities to rents and their willingness to accept alternative locations were key considerations in evaluating their likely response. Figure H.1 from Appendix H is a diagram of the process, indicating the contributions of both supply and demand factors to the forecasting procedure. It is included here (next page) because it shows the interdependence of the real estate development and employment forecasts.

Real Estate Market Interactions

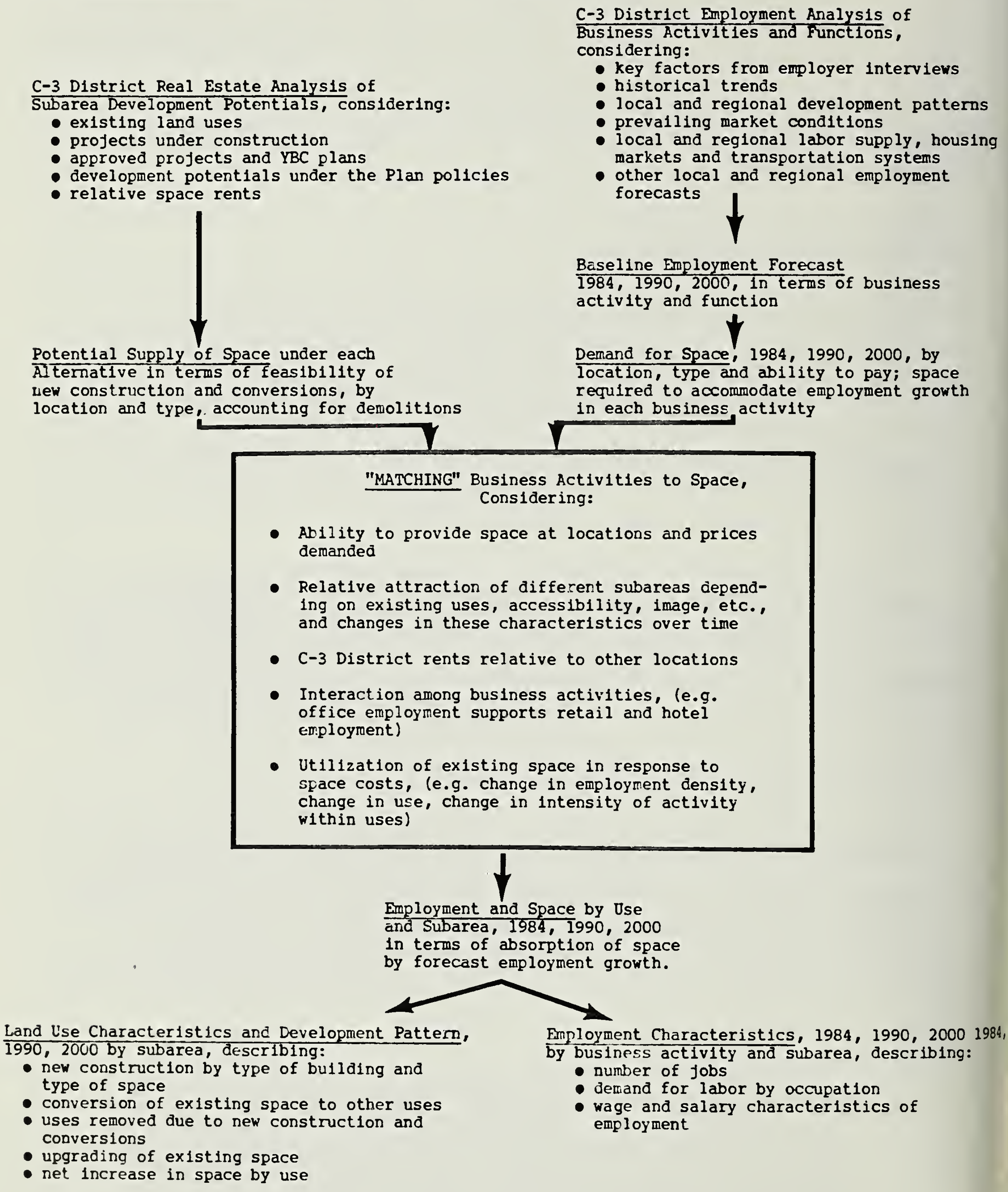
The 2000 forecast of C-3 District office space and the 2000 forecast of C-3 District office employment are two products of an analysis that focused on the interaction of demand and supply in the downtown real estate market. The approach was to consider all of the real estate market interactions which could occur given the locations and types of space likely to be developed. The factors listed in the box in the center of Figure H.1 identify some of the important considerations in this "matching" process.

To complete the forecast, judgments were made as to how businesses of different types (demand) would respond to various supply conditions, based largely on the nature of their preferences for a C-3 District location relative to other location options. Consideration was also given to the initial and long term responses of other participants in the real estate market: landowners, developers, and lenders (financial institutions).

The following discussion describes the type of interactions likely to occur because of changes in C-3 District land use policies./15/ The interactions are decisions and responses to decisions by the various participants in the office space market and the office development process. Figure G.1, a diagram of the dynamic process of real estate market adjustments to changes in land use policies, accompanies this discussion.

- The City's land use policies and zoning regulations affect the size of buildings, the availability of sites for development, and the costs of development. For the Downtown Plan, these effects were determined in the construction feasibility analysis (described in Appendix D) and the real estate feasibility analysis (described previously in this Appendix).

FIGURE H.1: DIAGRAM OF PROCESS OF DEVELOPING C-3 DISTRICT EMPLOYMENT AND LAND USE DEVELOPMENT FORECASTS F
THE DOWNTOWN PLAN



C-3 District Real Estate Analysis of Subarea Development Potentials, considering:
- existing land uses
- projects under construction
- approved projects and YBC plans
- development potentials under the Plan policies
- relative space rents

C-3 District Employment Analysis of Business Activities and Functions, considering:
- key factors from employer interviews
- historical trends
- local and regional development patterns
- prevailing market conditions
- local and regional labor supply, housing markets and transportation systems
- other local and regional employment forecasts

Baseline Employment Forecast 1984, 1990, 2000, in terms of business activity and function

Potential Supply of Space under each Alternative in terms of feasibility of new construction and conversions, by location and type, accounting for demolitions

Demand for Space, 1984, 1990, 2000, by location, type and ability to pay; space required to accommodate employment growth in each business activity

"MATCHING" Business Activities to Space, Considering:

- Ability to provide space at locations and prices demanded
- Relative attraction of different subareas depending on existing uses, accessibility, image, etc., and changes in these characteristics over time
- C-3 District rents relative to other locations
- Interaction among business activities, (e.g. office employment supports retail and hotel employment)
- Utilization of existing space in response to space costs, (e.g. change in employment density, change in use, change in intensity of activity within uses)

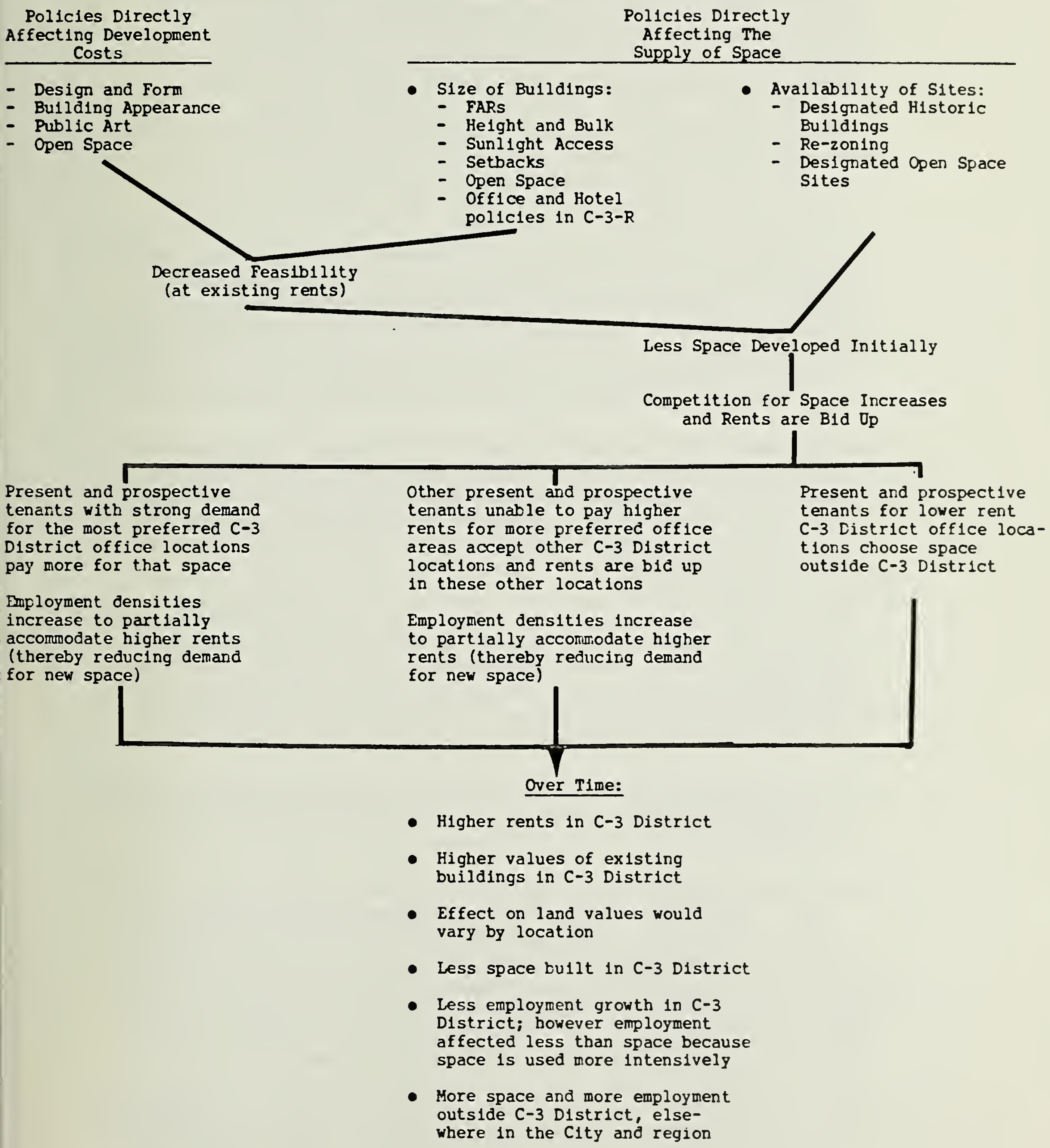
Employment and Space by Use and Subarea, 1984, 1990, 2000 in terms of absorption of space by forecast employment growth.

Land Use Characteristics and Development Pattern, 1990, 2000 by subarea, describing:
- new construction by type of building and type of space
- conversion of existing space to other uses
- uses removed due to new construction and conversions
- upgrading of existing space
- net increase in space by use

Employment Characteristics, 1984, 1990, 2000 by business activity and subarea, describing:
- number of jobs
- demand for labor by occupation
- wage and salary characteristics of employment

SOURCE: Recht Hausrath & Associates

FIGURE G.1: DYNAMIC PROCESS OF REAL ESTATE MARKET ADJUSTMENTS TO THE DOWNTOWN PLAN LAND USE POLICIES FOR OFFICE DEVELOPMENT



Policies Directly Affecting Development Costs

- Design and Form
- Building Appearance
- Public Art
- Open Space

Policies Directly Affecting The Supply of Space

- Size of Buildings:
  - FARs
  - Height and Bulk
  - Sunlight Access
  - Setbacks
  - Open Space
  - Office and Hotel policies in C-3-R
- Availability of Sites:
  - Designated Historic Buildings
  - Re-zoning
  - Designated Open Space Sites

Decreased Feasibility (at existing rents)

Less Space Developed Initially

Competition for Space Increases and Rents are Bid Up

Present and prospective tenants with strong demand for the most preferred C-3 District office locations pay more for that space

Employment densities increase to partially accommodate higher rents (thereby reducing demand for new space)

Other present and prospective tenants unable to pay higher rents for more preferred office areas accept other C-3 District locations and rents are bid up in these other locations

Employment densities increase to partially accommodate higher rents (thereby reducing demand for new space)

Present and prospective tenants for lower rent C-3 District office locations choose space outside C-3 District

Over Time:

- Higher rents in C-3 District
- Higher values of existing buildings in C-3 District
- Effect on land values would vary by location
- Less space built in C-3 District
- Less employment growth in C-3 District; however employment affected less than space because space is used more intensively
- More space and more employment outside C-3 District, elsewhere in the City and region

SOURCE: Recht Hausrath & Associates

- To the extent that the costs of development would be higher and/or the size of buildings would be smaller, the feasibility of development at current average rents would decrease.

- Decreased feasibility would mean that, initially, less space would be developed in the most preferred locations where development potentials would be most limited by the Plan. Less development could also result from policies which directly affect the availability of sites for development in these areas.

  Although the Plan enhances the long-term feasibility of office development to the south of Market Street, rents initially would not be high enough in many situations to cover the costs of the highrise construction that would be allowed.

  Financial institutions considering lending for new construction may choose to wait for evidence that rents would increase enough to justify construction under the changed policies. Landowners and developers may delay development decisions and land sales, choosing to wait and evaluate how rents might increase, in an attempt to maintain or improve the land value they expected under the prior set of land use policies.

- Competition for available space (of the types and at the locations affected by the change in policy) would increase because less new space would be supplied. Rents would be bid up to the extent that there are tenants (businesses) who are willing and able to pay higher rents in the locations that the space could be provided.

  Rents rise slowly over time. Faced with fewer and different options, tenants would evaluate whether they are willing to pay higher rents for available C-3 District locations. These decisions occur over time as prospective tenants consider the advantages and disadvantages of C-3 District locations and as the leases of existing tenants expire.

- As competition increases and tenants evaluate whether they are willing to pay higher rents, three types of situations are likely to result:

  1. Present and prospective tenants with strong demand for the most preferred office locations in the C-3 District would pay more for that space. Employment densities would increase to partially offset higher rents; thereby reducing the demand for new space. The extent to which employment densities would be higher depends on the increase in rents and the sensitivity of firms to higher space costs.

  2. Present and prospective tenants who are unwilling or unable to pay higher rents and compete for the more preferred office locations would choose other locations within the C-3 District. Rents would be bid

up in these more peripheral locations. Employment densities would increase to offset higher space costs, thereby reducing demand for new space.

3. Present and prospective tenants for lower rent C-3 District office space would choose locations outside the C-3 District or take steps to increase employment densities to compensate for some of the higher space costs. This group of tenants would be the least willing and least able to pay higher rents and the most likely to choose a location outside the C-3 District. Many are likely to choose locations to the south or west of the C-3 District.

- As rents increase, the feasibility of development under the new policies would also improve and eventually the pace of development would increase, although most new development would occur in different locations than in the past. Because of all of the adjustments to be made, new policies could have less effect on total development over the long term than they would on changes in the development pattern during the shorter term period following their adoption.

- Because of changes in policies, it is likely that in most cases less space would be built within any given time period. As firms adjust to higher rents by increasing employment densities, the demand for additional space is reduced.

  Further, as rents rise, the demand pool would become smaller as some present or prospective tenants choose locations outside the C-3 District.

  Less total space would be built ultimately to the extent that the policies of the Plan reduced the total future potential supply in the C-3 District by reducing the availability of sites for development there.

- Rents would be higher than they otherwise would be (i.e. would increase in real terms) to the extent that tenants are willing and able to pay more for a C-3 District location.

  It is important to understand that rents would be higher only to the extent that tenants are willing to pay them. The amount of increase in rents does not depend solely on an increase in costs or on a decrease in development feasibility. The rent that tenants are willing to pay depends on the alternative locations available. The minimum amount that they would have to pay for a certain location depends on the competition for that location and what others are willing to pay. Consequently, increased costs do not necessarily mean that rents can be raised to maintain land value even if property owners and developers attempt to do so. On the other hand, rents could increase to a higher level than implied by increased costs or reduced feasibility, if tenants were willing to pay this premium.

It was concluded that, in general, rents would increase in real terms between 1981 and 2000, under the Downtown Plan. Changes in rents would vary among types of locations and subareas within the C-3 District. Generally, rents would be more likely to increase to cover, or even more than cover, reduced feasibility in the more preferred areas for office activities. Demand for these locations would be strongest and the prospective tenants the most willing to pay more to compete for a location there. In locations of weaker demand where tenants are more sensitive to rents or have more options, rents are less likely to increase to cover the full impact (in terms of reduced feasibility) of the revision of the City's policies.

- Generally, the values of existing buildings in the C-3 District would be higher because of a reduced supply of new space and higher rents.
- Land values would also be affected. If rents rise to fully compensate for decreased feasibility, then land values would not be affected. If competition for certain locations results in even higher rents because of greater scarcity, rents and land values could be higher. However, if rents do not rise to fully cover the decreased feasibility, land values would be lower. Probably all of these situations would occur, depending on site location and conditions.

The diagram in Figure G.1 summarizes the process of real estate market adjustments to changed land use policies. All of the aspects of this process were considered in preparing the forecasts of future development under the Downtown Plan.

As described above, the impact of changing land use policies on the amount of office development, rents, and land values depends on the specifics of the policies in terms of locations and types of space and the time frame for the analysis. It is not possible to provide simple generalizations as to the conclusions of this analysis. The text descriptions of the forecasts of office development 1990 to 2000 describe the impacts on the amount and location of development. Another subsection of the text considers long term implications beyond 2000. The impacts on land values and building values are also described in Section IV.B.

OTHER ASPECTS OF THE LAND USE AND REAL ESTATE ANALYSIS

Open Space

The Downtown Plan requires new development to contribute to the "preservation and enhancement of existing open spaces and creation of additional open space...."/16/ This would be accomplished through zoning for existing and new parks and plazas, solar access criteria for new development adjacent to sunny streets and parks, and open space requirements for new development. All of the open space policies affect the amount of new development in the C-3 District. They determine the availability of sites for development: sites that would be developed as parks could not be considered in the potential pool of developable sites. The solar access criteria affect the size of buildings. The open space requirements and how they are likely to be satisfied affect the size and costs of new development in the C-3 District. The first two considerations regarding the open space policies of the Plan (park sites and solar access criteria) were discussed in the first section of this Appendix. This section focuses on the open space requirements and how they are likely to be satisfied.

The Plan requires that new non-residential C-3 District development contribute to open space in the District according to the following ratios:

Use District	Ratio of Open Space To Development
C-3-0 and C-3-0(SD)	1:50
C-3-R	1:100
C-3-G	1:50
C-3-S	1:50

In all use districts except the C-3-R, new development must contribute one usable square foot of open space for every 50 gross square feet of building area. The ratio is lower in the retail district (one sq. ft. of open space for every 100 gross sq. ft. of new building); larger amounts of new open space are judged to be inappropriate because Union Square and Hallidie Plaza serve the retail district well as major open space areas and because of the Plan's overall intent to preserve the low-rise character and active street frontage of the retail district./17/ The open space ratios would translate to a requirement for 6,000 sq. ft. of open space for a 300,000 sq. ft. office building, except in the C-3-R use district, where 3,000 sq. ft. of open would be required for a building of similar size.

The Plan provides several means of satisfying this open space requirement. The requirement could be met either on-site or off-site. Developers could provide open space in the amount required as part of their new development project. Strict standards would be applied to open space provided as part of new buildings so that, in many cases, developers would opt for the off-site contribution. Developers could contribute to acquisition and/or improvements to off-site open space and receive credits against their open space requirement. All open space would have to be usable and accessible to the public.

Two kinds of off-site open space contributions would satisfy the requirement: development of privately-owned open space lots and contributions to park development of publicly-owned properties. Developers would be able to contribute to the purchase of privately owned open space sites and to their development and/or maintenance. The developer would receive an amount of open space credit proportional to the contribution, as well as TDRs from the site. The Plan identifies two privately-owned sites along Howard Street in Subarea 2 that would be appropriate open space sites. Transfers of development rights could also occur within use districts from other private open space lots, if the proposed open space satisfied the Plan's criteria for public access, maintenance, sunlight, wind protection, landscaping and design. As an alter- native, builders could contribute to development of usable open space on land that is publicly-owned. Developers would receive open space credits towards their requirement, in proportion to their contribution to these types of sites. They would not receive any TDRs.

For the real estate analysis, it was assumed that most open space requirements would be met off-site. Due to the strict regulation of acceptable on-site open space, only a few developers with prime sites and an interest in creating a unique building environment would be willing to undertake the design expense and the long-term responsibilities of maintaining public access. Because of the requirements for sun access and wind protection, acceptable on-site open space would have to be provided as roof-top terraces or enclosed greenhouses in most cases. A small amount of this type of space would be provided and has been accounted for in the construction cost estimates for the Plan.

New non-residential development in the C-3 District during the 1990 to 2000 period would result in the requirement for about 200,000 sq. ft. of usable open space. About half of this requirement (95,000 sq. ft. of open space) would be due to development in Subarea 1. In Subarea 1, the City has identified three public spaces that could be developed as open space to satisfy this requirement./18/ The total open space created on these sites (75,000 sq. ft) would satisfy about 80 percent of the total Subarea 1 requirement, assuming a one-to-one match between the requirement and the area of the open space developed.

Another 85,000 sq. ft. of open space credit could be available from potential sites identified in Subarea 2 (the Special Development District). Developers in any Subarea would be able to contribute to the acquisition and/or development of privately-owned open space sites in the Special Development District. The development rights from these sites could be transferred between use districts. The potential Subarea 2 credits would satisfy about 80 percent of the open space requirement generated by development outside of Subarea 1. There would probably be some Subarea 1 developers that would choose to contribute to the Subarea 2 sites and receive TDRs in return, due to the premium on the additional rentable floor area they would consequently be able to add to their Subarea 1 development project.

The implication of this analysis is that off-site open space of the magnitude indicated in the Plan could be provided before 2000 as a consequence of the open space requirement. If the requirement applied to projects not approved before August 25, 1983, then the open space would be developed sooner./19/

Other Uses in Office Buildings

Highrise office buildings usually have other uses in lower floor space./20/ These other uses are typically small retail shops, restaurants or snack bars, and branch banks. In the land use analysis and forecasts, it was assumed that some of the space in office buildings would be devoted to these other uses./21/

For the period 1990 to 2000, assumptions were made about the amount of retail and branch bank space that would be developed in association with future office projects. An average ratio of new retail and branch bank space in office buildings to new office space was determined for each subarea. The total space in new office buildings forecast for the Plan combines the space estimated for all of these uses.

The assumptions about the amount of office building space devoted to retail and branch bank uses under the policies of the Plan are shown below. The proportions varied by subarea, and reflect an average ratio over many potential development projects in a subarea. No assumption was made for Subarea 7 because the Plan removes Chinatown from the C-3 District, and, in this EIR, no major new office development is forecast to occur there.

Percent of Total New Space in Office Buildings in Other Uses
(Average Over Subarea)

Subarea	Retail	Branch Bank	Total
1	4.0%	2.5%	6.5%
2	4.0%	2.5%	6.5%
3	2.5%	1.0%	3.5%
4	4.0%	2.5%	6.5%
5	6.5%	2.5%	9.0%
6	10.0%	2.5%	12.5%
7	--	--	--

The assumption about the amount of retail space in new office buildings is not the same for the Downtown Plan as it was for the five Alternatives. The Plan assumption reflects specific policies limiting retail uses in office buildings in Subareas 1 and 2 to ground floor space only. Major retail projects such as the Crocker Center Galleria would be discouraged under the Plan. As more office development occurs in areas more distant from the financial district and retail core, supporting activities, such as shops and eating places, would be part of the package to attract office tenants. The ratios for Subareas 5 and 6 reflect the probability that more mixed-use projects would be developed in these areas, in keeping with their high-intensity, mixed-use character.

As in the analysis for the prior periods, the net amount of space in retail and branch bank uses (adding free-standing retail space and subtracting projected demolition in these uses) was matched with forecast employment growth to determine the amount of additional space in these uses that would be absorbed between 1990 and 2000.

Retail and Hotel Development

New retail and hotel development cannot be predicted on the basis of feasibility as readily as new office development. The real estate analysis of these uses considered several other factors:

- the availability of sites in suitable locations
- the different types of retail and hotel development likely to occur, depending on location; e.g. first class hotel or motor lodge; department store or small convenience shops.
- for retail development, the amount and location of new space in office buildings
- opportunities for upgrading existing retail and hotel space
- ability to absorb increased activity in existing retail and hotel space

The Downtown Plan includes specific policies regarding the location of major new hotel development in the C-3 District. These limitations on acceptable locations for hotels larger than 200 rooms were considered in the 1990-2000 development forecasts, as was the acceptability of Subarea 2 as a potential future hotel location under the conditions of the Downtown Plan.

The same forecast methodology described in Appendix G of the Consultant's Report for the Alternatives applies for retail and hotel development under the Downtown Plan. Briefly, forecasts of retail sales and tourist activity were expressed in terms of employment growth and then converted to demand for space via employment density assumptions. The absorption of increased levels of activity in existing space was an important feature of these forecasts./22/

Other Uses

The types of space remaining to fill out the C-3 District land use pattern are cultural, institutional, educational and miscellaneous other space, industrial, warehouse and automotive space, and parking. The real estate analysis of these uses treated them as subordinate to office development in the C-3 District. Therefore, most of what happens to space currently in these uses is either demolition or conversion. If short-term parking were required to be replaced, then there would be less parking lost than described in the EIR text. The same forecast methodology used in analysis of the Alternatives was applied in the analysis of the Plan./23/

Conversion to Office Use

The conversion of existing space to higher-rent paying uses is an ongoing process in the downtown real estate market. For the purposes of this EIR, conversion refers to a change in the use of existing space, from a low intensity non-office activity (few employees per square foot and minimal improvements) to office activity, through physical upgrading and a change in tenants./24/ Conversion occurs when there is no near term economic gain to a property owner in tearing down an existing building and redeveloping the site, but office demand is strong enough to support rents for the existing space that justify remodeling and conversion to office use.

To estimate the conversion of space to office use, three types of C-3 District space were defined as the potential conversion supply: industrial/warehouse space, auto repair shops and garages, and miscellaneous other space that was largely vacant, according to the Downtown EIR Land Use Inventory. Uses besides these mentioned could be converted to office space. The conversion of the old Sloane's furniture store (retail space) is a current example. The estimates used for the real estate analysis focus on those uses that have historically been subject to conversion and which would come under increasing pressure in the future, because of their location and other market factors. Over the long term, these uses are the most likely alternate sources of office supply. The forecast economic growth in the C-3 District will support continued use of most existing retail, cultural, institutional and educational space.

Three considerations were the basis for estimating the amount of office space supplied by conversion of existing space in other uses. First, the estimates considered the demand for lower cost office space in older buildings. The demand for converted space was particularly sensitive to the amount of new office space provided, by subarea. Relative preferences for converted space in different subareas were also taken into account. Second, the total square footage of space in the uses identified as candidates for conversion and the distribution of these uses by subarea were important considerations. Knowing the pool from which converted space could be supplied provided a threshold for measuring realistic rates of conversion by use and subarea. Third, the estimated amount of these uses demolished for new construction, by subarea, was taken into consideration. If demolition and redevelopment offered a higher return to the property owner, conversion would not occur./25/

The 1990-2000 estimates of conversion under the Plan reflect the real estate market demand consequences of the Plan's effect on new development. Demand for converted office space would be high because the supply and cost of new office development would not be adequate to satisfy demand from all employment groups. Those seeking lower cost C-3 District office space would choose converted space. The rates of conversion would increase in Subareas 3, 4, 5, 6, and 7 under the Plan, compared to previous forecast rates of conversion. Most conversions would occur in Subareas 3 and 5, largely because they offer a large inventory of space in the uses typically vulnerable to conversion. Subarea 1 does not have a large inventory of space in these uses. Due to office development pressures in this subarea, this space would be demolished for new construction, rather than converted. Under the Plan, the increased relative importance of sites in Subarea 2 for new office development would result in less conversion in the future than has previously occurred. Although Subarea 2 has a large inventory of existing space potentially available for conversion, in many cases demolition and new construction would occur instead, or the expectations of future development would limit short-term investments in existing space. Table G.15 shows the final estimates of space converted to office use under the Downtown Plan by subarea.

The effects of the South of Market Industrial Conservation Special Use District (SUD) Interim Controls (Ordinance 574-83, adopted November 28, 1983) are not considered in these estimates. The potential effects of a long-term implementation of the South of Market SUD on impacts of the Downtown Plan are considered in the mitigation sections of the EIR (see Sections V.B and V.C).

Demolition of Existing Space

Before 1990, the amount of space forecast to be demolished, by use, was determined for the specific sites under construction, approved, planned for YBC, and proposed for development, though not yet approved./26/ The Downtown EIR Land Use Inventory was consulted for the amount of space by use on these development sites. Tables G.10 and G.12 at the end of this Appendix show the resulting totals for demolition by use.

For the 1990 to 2000 period in Subareas 1, 2 and 6, information from the analysis of opportunity sites was used to estimate the likely mix of uses and amount of space demolished for new construction./27/ Not all of the opportunity sites were assumed to be developed before 2000. Those most likely to be developed first were selected on the basis of two criteria: (1) the amount of existing development relative to the size of potential new development on the site and (2) the location of the site. The percentage mix of existing land uses on the selected sites was tabulated from the C-3 District Land Use Inventory, as was the total amount of space demolished as a percentage of the amount which could be built new. These percentages were applied to the forecast amount of new development to first estimate the amount of demolition and then the types of uses demolished. This methodology reflects the presumption that most future projects would occur on sites with characteristics similar to those identified as opportunity sites (if not on many of these sites).

In Subareas 3, 4, and 5, the methodology was somewhat different. These subareas have large amounts of vacant or near-vacant parcels relative to the amount of forecast new development. Using the Land Use Inventory and the height districts proposed in the Plan, the most probable locations for the forecast amounts of new development were identified, along with the typical mix and amounts of existing space in these locations. Table G.14 in the supplemental tables section of this Appendix shows the Plan forecasts of space demolished by use.

NOTES - Appendix G

/1/ "Growth Management Alternatives for Downtown San Francisco: Downtown EIR Consultant's Report", prepared by Environmental Science Associates, Inc., May 1983.

/2/ Just as the ranking of development sites that resulted from the real estate feasibility analysis of the Alternatives (see Appendix G in the Consultant's Report) was used as an indicator of the potential development pattern (amount of space by location) for each Alternative, so too the opportunity sites were used to establish an overall pattern of allowable development. In all cases, the "ranking" of sites was a means to more detailed analysis of space demand and supply interactions, the effectiveness of various transferable development rights (TDR) programs, and other aspects of the real estate analysis used to complete the forecasts. Neither method of ranking permits establishment of values of potential sites or buildings.

/3/ The Downtown Plan proposes that Chinatown (Subarea 7) be removed from the C-3 District. New planning and zoning policies have not yet been proposed for the entire Chinatown Special Use District; however,

NOTES - Appendix G (Continued)

for this analysis no major new office development was projected to be built there. Some land use changes are forecast to occur regardless of future zoning revisions. These are described in Section IV.B, Land Use and Real Estate Development Impact.

/4/ Although the Plan proposes no incentives to encourage development in these areas, one of the effects of the Plan's constraints on new development in the C-3-0 and C-3-R (Subareas 1 and 6) would be to shift small amounts of development to peripheral C-3 District locations where office development is allowed. These development forecasts are described in the Impact section (IV.B) and in the comparison of the Plan and the Alternatives. (Section VII.C.2.)

/5/ Figure G.1 in Appendix G of the Consultant's Report outlines the components and definitions for the real estate feasibility model. The following changes should be noted in the table: the capitalization rate assumptions apply to rent areas, as follows - nine percent in Rent Areas A and A', 11 percent in Rent Area F, and 10 percent in all other rent areas. In note (h) the first term should be "0.3 + (0.01 x FAR)".

/6/ The construction feasibility analysis described in Appendix D determined the range of the Plan's effects on the cost of new construction. Some of the design requirements that would contribute to higher construction costs are: building setbacks, facade treatment, artwork, and public open space (such as that provided in a roof-top terrace).

/7/ The demand depends on the preferences and location options of the space user. For example, for headquarters and executive functions of office activities, there is a ranking of possible C-3 locations that extends from the financial district, south of Market Street to Folsom Street. Due to the financial district's image and the relative scarcity of land for major new development, sites north of Market Street rank highest in terms of demand pressures for new development. Sites immediately south of Market Street rank next and are becoming increasingly more acceptable as alternative prime office locations. Sites further south toward Folsom Street are ranked lowest.

/8/ See The Downtown Plan, San Francisco Department of City Planning, August 1983 (hereinafter, Plan), p.66.

/9/ The supply estimates for the 1990-2000 analysis period accounted for forecast changes in the inventory of lots with existing rated buildings between 1984 and 1990. Some projects already approved or in YBC will result in demolition, major alteration, or the transfer of development rights from rated buildings. These sites were excluded from the calculation of TDR supply after 1990.

/10/ See Table III.1, note (b), page III.8.

NOTES - Appendix G (Continued)

/11/ The estimates of TDR supply from existing buildings were expressed as a range in the real estate analysis to account for variations in the measurement and applicability of the ground floor retail adjustment. Not all existing rated buildings in the C-3 District have ground floor retail uses. There are also cases in which only part of the ground floor is occupied by retail uses. Because of these variations and some uncertainty as to definitions and how the rule would be applied, the TDR supply estimates range from a low end, in which the 1 FAR assumed to represent the ground floor of a rated building does count as part of the existing actual square footage, to a high end, in which the 1 FAR for the ground floor does not count as part of the existing space (as in the example in the Appendix text). This range also indicated how much difference the method of calculation would make to the overall relationship between TDR supply and demand.

In practice, measurements of the TDR supply from a given site would be calculated in terms of actual square feet of space. The FAR measurement would only enter into the calculation of the amount of space that would be allowed on a rated building site, according to the Plan. The actual square footage of ground floor retail space would be subtracted from the total actual square footage of the rated building. The balance would then be subtracted from the amount of space allowed under the base FAR, to complete the calculation of the amount of floor area available for transfer.

/12/ See Plan, pp. 60-61. The Department of City Planning identified which lots were included in these potential open space sites. The Howard Street site, between First and Fremont streets is about 72,000 square feet in area, and the site at the corner of New Montgomery and Howard streets is about 13,000 square feet. The site measurements were taken from City and County of San Francisco Assessor's Maps.

/13/ The following is an extremely simplified example and assumes a rectangular building in both cases. Assuming an average floor-to-floor height of 12.5 feet, a 7:1 FAR building in the C-3-0(SD) (6:1 is the base FAR, one FAR is added for ground floor retail use) would be about 87.5 feet in height. In the C-3-0(SD), most of the height districts range from 200 feet to 450 feet. Again, assuming an average floor-to-floor height of 12.5 feet, a rectangular building 350 feet high (that used 100 percent of its lot area) would represent a 28:1 FAR, or four times the amount allowed under the base FAR and ground floor retail controls. Note that bulk controls and sunlight access requirements of the Plan would probably reduce this FAR by some amount.

/14/ The analytical process described in this sub-section, the "matching" process, was also used to forecast office development for the five Alternatives. Appendix H in the Consultant's Report contains a detailed discussion of the "matching" process used to forecast the development pattern and employment by business activity for each Alternative. The methodology is summarized in Appendix H of this EIR. The reader is

NOTES - Appendix G (Continued)

encouraged to review the Consultant's Report version of Appendix H because familiarity with the matching process is critical to understanding how the forecasts of office development for the Plan and Alternatives were completed.

/15/ The real estate market interactions described for the conditions of the Downtown Plan are also applicable to the five Alternatives. Under any system of zoning regulation, these types of decisions and responses occur. The outcome is different depending on the degree of control inherent in the regulations and on the flexibility of the response. The same discussion appears in Appendix G of the Consultant's Report.

/16/ See Plan, p. 51.

/17/ See Plan, p. 61.

/18/ The three publicly-owned open space sites are: Sansome Street closure between Bush and Sutter streets, Second Street closure between Market and Stevenson streets, and the Transbay Terminal Plaza. Together these areas would constitute abut 75,000 sq. ft. of open space. See Plan, p. 51. Estimates of open space site area were calculated from City and County of San Francisco Assessor's maps.

/19/ The open space requirement of the Plan is assumed not to apply to those projects approved and in YBC that would be built before 1990. It is not certain whether the requirement would be applied to projects in the planning stages and under review at the time the Plan was announced. To the extent that it did apply or that projects not yet proposed were built prior to 1990, then the total open space requirement for new non-residential C-3 District development to 2000 would be somewhat larger. An additional 46,000 sq. ft. of open space would be required of the 2.3 million sq. ft. of office development not yet approved but forecast to be built and occupied before 1990.

/20/ A sample of office buildings in the C-3 District, taken from the Downtown EIR Land Use Inventory, indicated that, on average, approximately 10 percent of the space in these buildings was occupied by non-office uses.

/21/ Appendix G of the Consultant's Report includes discussion of the assumptions used to estimate other uses in office buildings for the 1981-1984 and 1984-1990 development periods. The assumptions used for the five Alternatives are also described. See pp. G.38-G.40.

/22/ See the Consultant's Report, Appendix G. pp. G.40-G.41.

/23/ See the Consultant's Report, Appendix G. pp. G.41-G.42 for more detail.

NOTES - Appendix G (Continued)

/24/ Conversion should be distinguished from upgrading, which is another ongoing process in the downtown real estate market. Upgrading does not result in any change in use or net addition of space in a particular use. It is an investment in existing space that is reflected in this EIR in terms of increased employment.

/25/ Appendix G of the Consultant's Report (pp. G.43-G.47) contains a detailed discussion of the base case estimate of conversions between 1981 and 2000 and describes the differences in the forecast for each of the five Alternatives. The methodological assumptions are not repeated here, but the basis for the Plan forecast is explained.

/26/ For discussion of the assumptions about C-3 District development between 1984 and 1990, see Section IV.B, Land Use and Real Estate Development Impact.

/27/ The methodology devised to estimate demolition of existing space under the Downtown Plan approximates the methodology used for the Alternatives. The methodology was altered because the real estate feasibility model was not used in precisely the same way for the Plan forecast as it was for the Alternatives forecasts.

SUPPLEMENTAL TABLES AND MAPS FOR LAND USE AND REAL ESTATE ANALYSIS

Introduction to Supplemental Tables

The tables which follow provide detailed information to accompany the land use and real estate development sections (IV.B and VII.C.2) of this EIR. Together, the tables show all the information related to land use in the C-3 District from 1981-2000, for the Downtown Plan and all Alternatives.

The first set of tables, G.1-G.9, shows the distribution of space by use and subarea for 1981, 1984, 1990 and the Plan and five Alternatives for 2000. The first four tables also appear in the text, but are repeated here for continuity.

Tables G.10 through G.25 show the changes in space for all time periods, for the Plan and each Alternative. There are two tables for each period, for the Plan and for each Alternative. The first shows changes in space by use for the entire C-3 District, covering such topics as new construction, demolition and conversion. The table immediately following focuses on changes in office space, showing the detailed changes by subarea: new construction, occupancy by other uses, demolition and conversion.

For example, Table G.10 shows the changes for the 1981-1984 period in space by use, for the entire C-3 District. Table G.11 shows more detail for office use. The first number in the office column in Table G.10 is the number in the total column in Table G.11. The rest of the top line of Table G.11 shows how this total is distributed by subarea.

All numbers in the tables are thousands of gross square feet. The range of amounts of space among uses and subareas is so large that rounding any further would result in the loss of important information. The figures in the table are thus not meant to imply an unusually high degree of accuracy. As they stand now, the totals, changes, and distributions are consistent from one table to the next.

All of these tables, except those for the Plan (Tables G.4, G.14, and G.15), appear as supplemental tables in Appendix G of the Consultant's Report. The information in these tables is exactly the same, although the table numbers are different.

TABLE G.1: C-3 DISTRICT SPACE BY USE AND SUBAREA, 1981(a) (Thousands Of Gross Sq. Ft.)

Use	Subarea 1	2	3	4	5	6	7	Total C-3 District	Percent of Total
Office(b)	37,162	3,948	904	4,626	2,714	4,594	1,380	55,328	57.5%
% of C-3 Total	67.2	7.1	1.6	8.4	4.9	8.3	2.5	100.0%	
Retail	1,706	207	430	415	1,013	3,372	613	7,756	8.0%
% of C-3 Total	22.0	2.7	5.5	5.4	13.0	43.5	7.9	100.0%	
Transient Hotel	1,921	--	249	31	5,024	1,936	61	9,222	9.5%
% of C-3 Total	20.8	--	2.7	0.3	54.5	21.0	0.7	100.0%	
Residential Hotel	160	--	162	74	2,205	194	53	2,848	3.0%
% of C-3 Total	5.6	--	5.7	2.6	77.4	6.8	1.9	100.0%	
Housing	64	12	831	276	2,167	-	730	4,080	4.2%
% of C-3 Total	1.6	.3	20.4	6.7	53.1	-	17.9	100.0%	
Cultural/Institutional/ Educational/Other	1,097	163	871	183	2,179	936	889	6,318	6.6%
% of C-3 Total	17.3	2.6	13.8	2.9	34.5	14.8	14.1	100.0%	
Industrial/ Warehouse/ Automotive	153	637	2,324	105	1,167	32	47	4,465	4.6%
% of C-3 Total	3.4	14.3	52.0	2.4	26.1	0.7	1.1	100%	
Parking	1,053	1,108	1,643	299	1,250	890	108	6,351	6.6%
% of C-3 Total	16.6	17.4	25.9	4.7	19.7	14.0	1.7	100%	
TOTAL	43,316	6,075	7,414	6,009	17,719	11,954	3,881	96,368	100.0%
Percent of Total	45.0%	6.3%	7.7%	6.2%	18.4%	12.4%	4.0%	100.0%	

(a) Based on Downtown EIR Land Use Inventory (See Appendix C.)

(b) Non-office uses, such as retail and parking, located in office buildings are not included in estimates of office space, but are included in their respective space use categories. They occupy approximately 10 percent of the space in office buildings.

SOURCE: Recht Hausrath & Associates

TABLE G.2: C-3 DISTRICT SPACE BY USE AND SUBAREA, 1984(a) (Thousands Of Gross Sq. Ft.)

Use				Subarea				Total C-3 District	Percent of Total
	1	2	3	4	5	6	7		
Office(b)	42,666	4,369	1,422	4,635	2,877	4,710	1,395	62,074	60.0%
% of C-3 Total	68.7	7.1	2.3	7.5	4.6	7.5	2.3	100.0%	
Retail	2,096	207	430	415	1,021	3,438	613	8,220	7.9%
% of C-3 Total	25.5	2.5	5.2	5.1	12.4	41.8	7.5	100.0%	
Transient Hotel	1,921	--	249	31	5,024	2,436	61	9,722	9.5%
% of C-3 Total	19.8	--	2.6	0.3	51.7	25.0	0.6	100.0%	
Residential Hotel	160	--	162	74	2,205	194	53	2,848	2.7%
% of C-3 Total	5.6	--	5.7	2.6	77.4	6.8	1.9	100.0%	
Housing	162	12	831	276	2,167	-	730	4,178	4.0%
% of C-3 Total	3.9	.3	19.9	6.6	51.8	-	17.5	100.0%	
Cultural/Institutional Educational/Other	1,035	150	871	183	2,179	823	879	6,120	5.9%
% of C-3 Total	16.9	2.5	14.2	3.0	35.6	13.4	14.4	100.0%	
Industrial/Warehouse/ Automotive	136	568	2,141	96	1,116	29	42	4,128	4.0%
% of C-3 Total	3.3	13.8	51.9	2.3	27.0	0.7	1.0	100.0%	
Parking	1,046	1,079	1,643	299	1,227	856	108	6,258	6.0%
% of C-3 Total	16.7	17.2	26.3	4.8	19.6	13.7	1.7	100.0%	
TOTAL	49,222	6,385	7,749	6,009	17,816	12,486	3,881	103,548	100.0%
Percent of Total	47.5%	6.2%	7.5%	5.8%	17.2%	12.1%	3.7%	100.0%	

(a) Space assumed to be constructed in 1982-84 has been added to the 1981 inventory, space on these sites in 1981 removed, and projected conversion of space included. Estimated net changes in space 1981-84 are reflected by the differences between the figures in Table IV.B.1 and the figures shown here.

(b) Non-office uses, such as retail and parking, located in office buildings are not included in estimates of office space, but are included in their respective space use categories.

SOURCE: Recht Hausrath & Associates

TABLE G.3: C-3 DISTRICT SPACE BY USE AND SUBAREA, 1990(a) (Thousands Of Gross Sq. Ft.)

				Subarea					
Use	1	2	3	4	5	6	7	Total C-3 District	Percent of Total
Office(b)	48,561	5,093	1,793	4,654	3,185	5,662	1,544	70,492	60.9%
% of C-3 Total	68.9	7.2	2.6	6.6	4.5	8.0	2.2	100.0%	
Retail	2,434	241	522	415	1,039	3,687	611	8,949	7.7%
% of C-3 Total	27.2	2.7	5.8	4.7	11.6	41.2	6.8	100.0%	
Transient Hotel	1,921	--	249	31	6,837	3,436	61	12,535	10.8%
% of C-3 Total	15.3	--	2.0	.3	54.5	27.4	.5	100.0%	
Residential Hotel	147	--	162	74	2,205	194	53	2,835	2.4%
% of C-3 Total	5.2	--	5.7	2.6	77.8	6.8	1.9	100.0%	
Housing	505	342	831	276	2,185	300	834	5,273	4.6%
% of C-3 Total	9.6	6.5	15.8	5.2	41.4	5.7	15.8	100.0%	
Cultural/Institutional Educational/Other	889	125	1,286	183	2,136	521	858	5,998	5.2%
% of C-3 Total	14.8	2.1	21.4	3.1	35.6	8.7	14.3	100.0%	
Industrial/Warehouse/ Automotive	103	431	1,716	77	905	21	32	3,285	2.8%
% of C-3 Total	3.1	13.1	52.2	2.4	27.5	.7	1.0	100.0%	
Parking	936	1,043	1,712	299	1,148	1,186	99	6,423	5.6%
% of C-3 Total	14.6	16.2	26.7	4.6	17.9	18.5	1.5	100.0%	
TOTAL	55,496	7,275	8,271	6,009	19,640	15,007	4,092	115,790	100.0%
Percent of Total	47.9	6.3	7.1	5.2	17.0	13.0	3.5	100.0%	

(a) 1990 space includes space in 1984 setting, and changes estimated for 1984-1990: space assumed to be constructed, space demolished, and changes in use of space (conversions).

(b) Non-office uses, such as retail, located in office buildings are not included in the estimates of space in office use, but are included in their respective space use categories.

SOURCE: Recht Hausrath & Associates

(Thousands Of Gross Sq. Ft.)

Use	Subarea 1	2	3	4	5	6	7	Total C-3 District	Percent Of Total
Office(b)	52,276	7,538	2,424	4,998	4,104	5,941	1,608	78,889	63.0%
% of C-3 Total	66.3	9.6	3.1	6.3	5.2	7.5	2.0	100.0%	
Retail	2,509	365	552	427	1,109	4,059	611	9,632	7.7%
% of C-3 Total	26.1	3.8	5.7	4.4	11.5	42.1	6.4	100.0%	
Transient Hotel	2,161	225	409	31	7,497	3,736	61	14,120	11.3%
% of C-3 Total	15.3	1.6	2.9	0.2	53.1	26.5	0.4	100.0%	
Residential Hotel	147	--	162	74	2,205	194	53	2,835	2.2%
% of C-3 Total	5.2	--	5.7	2.6	77.8	6.8	1.9	100.0%	
Housing	755	342	876	321	2,365	300	884	5,843	4.7%
% of C-3 Total	12.9	5.9	15.0	5.5	40.5	5.1	15.1	100.0%	
Cultural/Institutional Educational/Other	877	85	1,286	183	1,934	307	817	5,489	4.4%
% of C-3 Total	16.0	1.6	23.4	3.3	35.2	5.6	14.9	100.0%	
Industrial/Warehouse/ Automotive	94	255	1,461	21	542	6	9	2,388	1.9%
% of C-3 Total	3.9	10.7	61.2	0.9	22.7	0.2	0.4	100.0%	
Parking	875	956	1,586	269	1,112	1,150	99	6,047	4.8%
% of C-3 Total	14.5	15.8	26.2	4.5	18.4	19.0	1.6	100.0%	
TOTAL	59,694	9,766	8,756	6,324	20,868	15,693	4,142	125,243	100.0%
Percent of Total	47.7	7.8	7.0	5.0	16.7	12.5	3.3	100.0%	

(a) 2000 space includes 1990 space and changes estimated for 1990-2000: space constructed, space demolished, and changes in the use of space (conversions).

(b) Non-office uses, such as retail, located in office buildings are not included in the estimates of space in office use, but are included in their respective space use categories.

SOURCE: Recht Hausrath & Associates

TABLE G.5: ALTERNATIVE 1 - C-3 DISTRICT SPACE BY USE AND SUBAREA, 2000(a)
(Thousands Of Gross Sq. Ft.)

	Subarea							Total
Use	1	2	3	4	5	6	7	C-3 District
Office(b)	57,015	7,560	3,451	5,151	4,528	6,793	1,992	86,490
% of C-3 Total	65.9	8.7	4.0	6.0	5.2	7.9	2.3	100.0%
Retail	2,881	423	547	453	1,178	4,162	644	10,288
% of C-3 Total	28.0	4.1	5.3	4.4	11.5	40.4	6.3	100.0%
Transient Hotel	2,321	--	409	31	8,096	3,955	61	14,873
% of C-3 Total	15.6	--	2.8	0.2	54.4	26.6	0.4	100.0%
Residential Hotel	147	--	162	74	2,205	194	53	2,835
% of C-3 Total	5.2	--	5.7	2.6	77.8	6.8	1.9	100.0%
Housing	596	340	831	276	2,307	300	845	5,495
% of C-3 Total	10.8	6.2	15.1	5.0	42.0	5.5	15.4	100.0%
Cultural/Institutional Educational/Other	772	93	1,453	183	1,979	145	814	5,439
% of C-3 Total	14.2	1.7	26.7	3.3	36.4	2.7	15.0	100.0%
Industrial/Warehouse/ Automotive	34	255	856	42	524	12	19	1,742
% of C-3 Total	1.9	14.6	49.4	2.4	29.9	0.7	1.1	100.0%
Parking	777	903	1,622	249	1,023	1,149	96	5,819
% of C-3 Total	13.4	15.5	27.9	4.3	17.6	19.7	1.6	100.0%
TOTAL	64,543	9,574	9,331	6,459	21,840	16,710	4,524	132,981
Percent of Total	48.5	7.2	7.0	4.9	16.4	12.6	3.4	100.0%

(a) 2000 space includes 1990 space and changes estimated for 1990-2000: space constructed, space demolished, and changes in the use of space (conversions).

(b) Non-office uses, such as retail, located in office buildings are not included in the estimates of space in office use, but are included in their respective space use categories.

SOURCE: Recht Hausrath & Associates

TABLE G.6: ALTERNATIVE 2 - C-3 DISTRICT SPACE BY USE AND SUBAREA, 2000(a)
(Thousands Of Gross Sq. Ft.)

	Subarea							Total C-3 District
Use	1	2	3	4	5	6	7	
Office(b)	56,085	7,559	3,437	5,105	4,416	6,710	1,954	85,266
% of C-3 Total	65.8	8.8	4.0	6.0	5.2	7.9	2.3	100.0%
Retail	2,803	423	544	449	1,176	4,154	643	10,192
% of C-3 Total	27.5	4.2	5.3	4.4	11.5	40.8	6.3	100.0%
Transient Hotel	2,321	--	409	31	8,096	3,955	61	14,873
% of C-3 Total	15.6	--	2.8	0.2	54.4	26.6	0.4	100.0%
Residential Hotel	147	--	162	74	2,205	194	53	2,835
% of C-3 Total	5.2	--	5.7	2.6	77.8	6.8	1.9	100.0%
Housing	986	340	1,326	456	2,699	345	1,004	7,156
% of C-3 Total	13.8	4.8	18.5	6.4	37.7	4.8	14.0	100.0%
Cultural/Institutional Educational/Other	823	93	1,084	183	2,045	146	831	5,205
% of C-3 Total	15.8	1.8	20.8	3.5	39.3	2.8	16.0	100.0%
Industrial/Warehouse/ Automotive	34	255	1,142	42	524	12	19	2,028
% of C-3 Total	1.7	12.6	56.3	2.1	25.8	0.6	0.9	100.0%
Parking	776	900	1,619	249	1,032	1,150	97	5,823
% of C-3 Total	13.3	15.5	27.8	4.3	17.7	19.7	1.7	100.0%
TOTAL	63,975	9,570	9,723	6,589	22,193	16,666	4,662	133,378
Percent of Total	48.0	7.2	7.3	4.9	16.6	12.5	3.5	100.0%

(a) 2000 space includes 1990 space and changes estimated for 1990-2000: space constructed, space demolished, and changes in the use of space (conversions).

(b) Non-office uses, such as retail, located in office buildings are not included in the estimates of space in office use, but are included in their respective space use categories.

SOURCE: Recht Hausrath & Associates

TABLE G.7: ALTERNATIVE 3 - C-3 DISTRICT SPACE BY USE AND SUBAREA, 2000(a)
(Thousands Of Gross Sq. Ft.)

	Subarea							Total C-3
Use	1	2	3	4	5	6	7	District
Office(b)	54,348	6,952	3,703	5,343	4,677	6,546	1,856	83,425
% of C-3 Total	65.2	8.3	4.4	6.4	5.6	7.9	2.2	100.0%
Retail	2,677	353	555	460	1,190	4,087	623	9,945
% of C-3 Total	26.9	3.5	5.6	4.6	12.0	41.1	6.3	100.0%
Transient Hotel	2,321	--	409	31	8,096	3,955	61	14,873
% of C-3 Total	15.6	--	2.8	0.2	54.4	26.6	0.4	100.0%
Residential Hotel	147	--	162	74	2,205	194	53	2,835
% of C-3 Total	5.2	--	5.7	2.6	77.8	6.8	1.9	100.0%
Housing	1,129	341	831	276	2,281	300	875	6,033
% of C-3 Total	18.7	5.6	13.8	4.6	37.8	5.0	14.5	100.0%
Cultural/Institutional Educational/Other	828	79	1,006	183	1,920	173	817	5,006
% of C-3 Total	16.5	1.6	20.1	3.6	38.4	3.5	16.3	100.0%
Industrial/Warehouse/ Automotive	38	192	1,018	11	456	9	14	1,738
% of C-3 Total	2.2	11.1	58.6	0.6	26.2	0.5	0.8	100.0%
Parking	797	929	1,622	252	991	1,144	99	5,834
% of C-3 Total	13.7	15.9	27.8	4.3	17.0	19.6	1.7	100.0%
TOTAL	62,285	8,846	9,306	6,630	21,816	16,408	4,398	129,689
Percent of Total	48.0	6.8	7.2	5.1	16.8	12.7	3.4	100.0%

(a) 2000 space includes 1990 space and changes estimated for 1990-2000: space constructed, space demolished, and changes in the use of space (conversions).

(b) Non-office uses, such as retail, located in office buildings are not included in the estimates of space in office use, but are included in their respective space use categories.

SOURCE: Recht Hausrath & Associates

TABLE G.8: ALTERNATIVE 4 - C-3 DISTRICT SPACE BY USE AND SUBAREA, 2000(a)
(Thousands Of Gross Sq. Ft.)

	Subarea							Total C-3 District
Use	1	2	3	4	5	6	7	
Office(b)	53,556	5,863	2,073	4,753	3,419	6,138	1,720	77,522
% of C-3 Total	69.1	7.6	2.7	6.1	4.4	7.9	2.2	100.0%
Retail	2,663	295	547	423	1,151	4,073	614	9,766
% of C-3 Total	27.3	3.0	5.6	4.3	11.8	41.7	6.3	100.0%
Transient Hotel	2,321	--	409	31	7,797	3,976	61	14,595
% of C-3 Total	15.9	--	2.8	0.2	53.4	27.3	0.4	100.0%
Residential Hotel	147	--	162	74	2,205	194	53	2,835
% of C-3 Total	5.2	--	5.7	2.6	77.8	6.8	1.9	100.0%
Housing	1,405	432	1,471	596	2,811	385	1,104	8,204
% of C-3 Total	17.1	5.3	17.9	7.2	34.4	4.7	13.4	100.0%
Cultural/Institutional Educational/Other	841	115	1,257	183	2,105	185	851	5,537
% of C-3 Total	15.2	2.1	22.7	3.3	38.0	3.3	15.4	100.0%
Industrial/Warehouse/ Automotive	44	388	1,655	70	866	19	30	3,072
% of C-3 Total	1.4	12.6	53.9	2.3	28.2	0.6	1.0	100.0%
Parking	809	1,009	1,671	289	1,064	1,171	99	6,112
% of C-3 Total	13.2	16.5	27.4	4.7	17.4	19.2	1.6	100.0%
TOTAL	61,786	8,102	9,245	6,419	21,418	16,141	4,532	127,643
Percent of Total	48.4	6.4	7.2	5.0	16.8	12.6	3.6	100.0%

(a) 2000 space includes 1990 space and changes estimated for 1990-2000: space constructed, space demolished, and changes in the use of space (conversions).

(b) Non-office uses, such as retail, located in office buildings are not included in the estimates of space in office use, but are in their respective space use categories.

SOURCE: Recht Hausrath & Associates

TABLE G.9: ALTERNATIVE 5 - C-3 DISTRICT SPACE BY USE AND SUBAREA, 2000(a)
(Thousands Of Gross Sq. Ft.)

Use	Subarea 1	2	3	4	5	6	7	Total C-3 District
Office(b)	52,667	6,490	2,231	4,895	3,960	5,984	1,692	77,919
% of C-3 Total	67.6	8.3	2.8	6.3	5.1	7.7	2.2	100.0%
Retail	2,602	319	547	430	1,172	4,086	617	9,773
% of C-3 Total	26.6	3.3	5.6	4.4	12.0	41.8	6.3	100.0%
Transient Hotel	2,321	--	409	31	7,797	3,976	61	14,595
% of C-3 Total	15.9	--	2.8	0.2	53.4	27.3	0.4	100.0%
Residential Hotel	147	--	162	74	2,205	194	53	2,835
% of C-3 Total	5.2	--	5.7	2.6	77.8	6.8	1.9	100.0%
Housing	699	341	943	276	2,491	348	1,030	6,128
% of C-3 Total	11.4	5.6	15.4	4.5	40.6	5.7	16.8	100.0%
Cultural/Institutional Educational/Other	844	79	1,243	183	1,980	185	817	5,331
% of C-3 Total	15.8	1.5	23.3	3.4	37.2	3.5	15.3	100.0%
Industrial/Warehouse/ Automotive	55	128	1,506	21	537	6	9	2,262
% of C-3 Total	2.4	5.7	66.6	0.9	23.7	0.3	0.4	100.0%
Parking	836	959	1,622	279	1,039	1,140	99	5,974
% of C-3 Total	14.0	16.0	27.1	4.7	17.4	19.1	1.7	100.0%
TOTAL	60,171	8,316	8,663	6,189	21,181	15,919	4,378	124,817
Percent of Total	48.2	6.7	6.9	5.0	17.0	12.7	3.5	100.0%

(a) 2000 space includes 1990 space and changes estimated for 1990-2000: space constructed, space demolished, and changes in the use of space (conversions).

(b) Non-office uses, such as retail, located in office buildings are not included in the estimates of space in office use, but are included in their respective space use categories.

SOURCE: Recht Hausrath & Associates

TABLE G.10: CHANGES IN C-3 DISTRICT SPACE BY USE, 1981-1984 (Thousands of Gross Sq. Ft.)

	Office	Retail	Transient Hotel	Residential Hotel	Housing	Cult./Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	7,418	--	500	--	--	--	--	--	7,918
Other New Construction	--	175	--	--	98	--	--	--	273
Retail Space In New Office Buildings	(426)	426	--	--	--	--	--	--	0
New Space by Use	6,992	601	500	--	98	--	--	--	8,191
Space Demolished by Use	(719)	(137)	--	--	--	(62)	--	(93)	(1,011)
Conversion to Office Use	542	--	--	--	--	(205)	(337)	--	0
Other Changes In Use	(69)	--	--	--	--	69	--	--	0
Net Changes In Space by Use	6,746	464	500	--	98	(198)	(337)	(93)	7,180

SOURCE: Recht Hausrath & Associates

TABLE G.11: CHANGES IN C-3 DISTRICT OFFICE SPACE BY SUBAREA, 1981-1984
(Thousands of Gross Sq. Ft.)

	Subarea							Total C-3 District
	1	2	3	4	5	6	7	
Total Space in New Office Buildings	6,624	339	335	--	120	--	--	7,418
(Amount Occupied by Retail Use)	(418)	--	--	--	(8)	--	--	(426)
New Space for Office Uses	6,206	339	335	--	112	--	--	6,992
(Office Space Demolished)	(719)	--	--	--	--	--	--	(719)
Net New Space Occupied by Office Uses	5,487	339	335	--	112	--	--	6,273
Conversions to Office Use	17	82	183	9	120	116	15	542
Changes to Other Uses	--	--	--	--	(69)	--	--	(69)
Total Additional Space Occupied by Office Uses	5,504	421	518	9	163	116	15	6,746
Percent of Total Additional Space Occupied by Office Uses	81.6%	6.3%	7.7%	0.1%	2.4%	1.7%	0.2%	100.0%

SOURCE: Recht Hausrath & Associates

TABLE G.12: CHANGES IN C-3 DISTRICT SPACE BY USE, 1984-1990 (Thousands of Gross Sq. Ft.)

	Office	Retail	Transient Hotel	Residential Hotel	Housing	Cult./Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	9,868	--	2,813	--	--	--	--	--	12,681
Other New Construction	--	360	--	--	1,095	565	--	1,030	3,050
Retail Space In New Office Buildings	(557)	557	--	--	--	--	--	--	0
New Space by Use	9,311	917	2,813	--	1,095	565	--	1,030	15,731
Space Demolished by Use	(1,542)	(188)	--	(13)	--	(733)	(148)	(865)	(3,489)
Conversion to Office Use	805	--	--	--	--	(110)	(695)	--	0
Other Changes In Use	(156)	--	--	--	--	156	--	--	0
Net Changes In Space by Use	8,418	729	2,813	(13)	1,095	(122)	(843)	165	12,242

SOURCE: Recht Hausrath & Associates

TABLE G.13: CHANGES IN C-3 DISTRICT OFFICE SPACE BY SUBAREA, 1984-1990
(Thousands of Gross Sq. Ft.)

	Subarea							Total C-3 District
	1	2	3	4	5	6	7	
Total Space in New Office Buildings	7,733	679	34	--	297	995	130	9,868
(Amount Occupied by Retail Use)	(416)	(34)	(2)	--	(47)	(50)	(8)	(557)
New Space for Office Uses	7,317	645	32	--	250	945	122	9,311
(Office Space Demolished)	(1,450)	(84)	--	--	(6)	--	(2)	(1,542)
Net New Space Occupied by Office Uses	5,867	561	32	--	244	945	120	7,769
Conversions to Office Use	28	163	399	19	160	7	29	805
Changes to Other Uses	--	--	(60)	--	(96)	--	--	(156)
Total Additional Space Occupied by Office Uses	5,895	724	371	19	308	952	149	8,418
Percent of Total Additional Space Occupied by Office Uses	70.0%	8.6%	4.4%	0.2%	3.7%	11.3%	1.8%	100.0%

SOURCE: Recht Hausrath & Associates

TABLE G.14: DOWNTOWN PLAN - CHANGES IN C-3 DISTRICT SPACE BY USE, 1990-2000
(Thousands of Gross Sq. Ft.)

	Office	Retail	Transient Hotel	Housing	Cult./Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	8,400	--	1,585	--	--	--	--	9,985
Other New Construction	--	470	--	570	--	--	--	1,040
Retail Space In New Office Buildings	(358)	358	--	--	--	--	--	0
New Space by Use	8,042	828	1,585	570	--	--	--	11,025
Space Demolished by Use	(709)	(175)	--	--	(177)	(127)	(376)	(1,564)
Conversion to Office Use	1,072	--	--	--	(302)	(770)	--	0
Other Changes In Use	(8)	30	--	--	(30)	--	--	(8)
Net Change In Space By Use	8,397	683	1,585	570	(509)	(897)	(376)	9,453

SOURCE: Recht Hausrath & Associates

TABLE G.15: DOWNTOWN PLAN - CHANGES IN C-3 DISTRICT OFFICE SPACE BY SUBAREA, 1990-2000 (Thousands of Gross Sq. Ft.)

	Subarea							Total C-3 District
	1	2	3	4	5	6	7	
Total Space in New Office Buildings	4,500	2,500	400	300	400	300	--	8,400
(Amount Occupied by Retail Use)	(180)	(100)	(10)	(12)	(26)	(30)	--	(358)
New Space for Office Uses	4,320	2,400	390	288	374	270	--	8,042
(Office Space Removed)	(605)	(56)	--	--	(1)	(47)	--	(709)
Net New Space Occupied by Office Uses	3,715	2,344	390	288	373	223	--	7,333
Conversions to Office Use	--	101	241	56	554	56	64	1,072
Changes to Other Uses	--	--	--	--	(8)	--	--	(8)
Total Additional Space Occupied by Office Uses	3,715	2,445	631	344	919	279	64	8,397
Percent of Total Additional Space Occupied by Office Uses	44.3%	29.1%	7.5%	4.1%	10.9%	3.3%	0.8%	100.0%

SOURCE: Recht Hausrath & Associates

TABLE G.16: ALTERNATIVE 1 - CHANGES IN C-3 DISTRICT SPACE BY USE, 1990-2000
(Thousands of Gross Sq. Ft.)

	Office	Retail	Transient Hotel	Housing	Cult./Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	16,935	--	2,360	--	--	--	--	19,295
Other New Construction	--	478	--	330	--	--	--	808
Retail Space In New Office Buildings	(1,438)	1,438	--	--	--	--	--	0
New Space by Use	15,497	1,916	2,360	330	--	--	--	20,103
Space Demolished by Use	(853)	(577)	(22)	(108)	(606)	(142)	(604)	(2,912)
Conversion to Office Use	1,721	--	--	--	(320)	(1,401)	--	0
Other Changes In Use	(367)	--	--	--	367	--	--	0
Net Changes In Space by Use	15,998	1,339	2,338	222	(559)	(1,543)	(604)	17,191

SOURCE: Recht Hausrath & Associates

TABLE G.17: ALTERNATIVE 1 - CHANGES IN C-3 DISTRICT OFFICE SPACE BY SUBAREA, 1990-2000 (Thousands of Gross Sq. Ft.)

	Subarea 1	2	3	4	5	6	7	Total C-3 District
Total Space in New Office Buildings	10,000	2,500	1,000	500	1,035	1,400	500	16,935
(Amount Occupied by Retail Use)	(750)	(188)	(25)	(38)	(129)	(245)	(63)	(1,438)
New Space for Office Uses	9,250	2,312	975	462	906	1,155	437	15,497
(Office Space Demolished)	(796)	--	--	--	(9)	(33)	(15)	(853)
Net New Space Occupied by Office Uses	8,454	2,312	975	462	897	1,122	422	14,644
Conversions to Office Use	--	155	850	35	646	9	26	1,721
Changes to Other Uses	--	--	(167)	--	(200)	--	--	(367)
Total Additional Space Occupied by Office Uses	8,454	2,467	1,658	497	1,343	1,131	448	15,998
Percent of Total Additional Space Occupied by Office Uses	52.9%	15.4%	10.3%	3.1%	8.4%	7.1%	2.8%	100.0%

SOURCE: Recht Hausrath & Associates

TABLE G.18: ALTERNATIVE 2 - CHANGES IN C-3 DISTRICT SPACE BY USE, 1990-2000
(Thousands of Gross Sq. Ft.)

	Office	Retail	Transient Hotel	Housing	Cult/Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	15,500	--	2,360	--	--	--	--	17,860
Other New Construction	--	487	--	1,980	--	--	--	2,467
Retail Space In New Office Buildings	(1,315)	1,315	--	--	--	--	--	0
New Space by Use	14,185	1,802	2,360	1,980	--	--	--	20,327
Space Demolished by Use	(854)	(559)	(22)	(97)	(466)	(141)	(600)	(2,739)
Conversion to Office Use	1,726	--	--	--	(610)	(1,116)	--	0
Other Changes In Use	(283)	--	--	--	283	--	--	0
Net Changes In Space by Use	14,774	1,243	2,338	1,883	(793)	(1,257)	(600)	17,588

SOURCE: Recht Hausrath & Associates

TABLE G.19: ALTERNATIVE 2 - CHANGES IN C-3 DISTRICT OFFICE SPACE BY SUBAREA, 1990-2000
(Thousands of Gross Sq. Ft.)

	Subarea							Total C-3 District
	1	2	3	4	5	6	7	
Total Space in New Office Buildings	9,000	2,500	900	450	900	1,300	450	15,500
(Amount Occupied by Retail Use)	(675)	(188)	(22)	(34)	(112)	(228)	(56)	(1,315)
New Space for Office Uses	8,325	2,312	878	416	788	1,072	394	14,185
(Office Space Demolished)	(801)	--	--	--	(8)	(33)	(12)	(854)
Net New Space Occupied by Office Uses	7,524	2,312	878	416	780	1,039	382	13,331
Conversions to Office Use	--	154	850	35	650	9	28	1,726
Changes to Other Uses	--	--	(84)	--	(199)	--	--	(283)
Total Additional Space Occupied by Office Uses	7,524	2,466	1,644	451	1,231	1,048	410	14,774
Percent of Total Additional Space Occupied by Office Uses	50.9%	16.7%	11.1%	3.1%	8.3%	7.1%	2.8%	100.0%

SOURCE: Recht Hausrath & Associates

TABLE G.20: ALTERNATIVE 3 - CHANGES IN C-3 DISTRICT SPACE BY USE, 1990-2000
(Thousands of Gross Sq. Ft.)

	Office	Retail	Transient Hotel	Housing	Cult./Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	13,200	--	2,360	--	--	--	--	15,560
Other New Construction	--	487	--	845	--	--	--	1,332
Retail Space In New Office Buildings	(1,100)	1,100	--	--	--	--	--	0
New Space by Use	12,100	1,587	2,360	845	--	--	--	16,892
Space Demolished by Use	(762)	(591)	(22)	85	(516)	(428)	(589)	(2,993)
Conversion to Office Use	1,862	--	--	--	(743)	(1,119)	--	0
Other Changes In Use	(267)	--	--	--	267	--	--	0
Net Change In Space By Use	12,933	996	2,338	760	(992)	(1,547)	(589)	13,899

SOURCE: Recht Hausrath & Associates

TABLE G.21: ALTERNATIVE 3 - CHANGES IN C-3 DISTRICT OFFICE SPACE BY SUBAREA, 1990-2000
(Thousands of Gross Sq. Ft.)

	Subarea							Total C-3 District
	1	2	3	4	5	6	7	
Total Space in New Office Buildings	7,000	1,800	1,300	700	1,000	1,100	300	13,200
(Amount Occupied by Retail Use)	(525)	(135)	(33)	(52)	(125)	(192)	(38)	(1,100)
New Space for Office Uses	6,475	1,665	1,267	648	875	908	262	12,100
(Office Space Removed)	(688)	(4)	(17)	(3)	(9)	(36)	(5)	(762)
Net New Space Occupied by Office Uses	5,787	1,661	1,250	645	866	872	257	11,338
Conversions to Office Use	--	198	730	44	823	12	55	1,862
Changes to Other Uses	--	--	(70)	--	(197)	--	--	(267)
Total Additional Space Occupied by Office Uses	5,787	1,859	1,910	689	1,492	884	312	12,933
Percent of Total Additional Space Occupied by Office Uses	44.8%	14.4%	14.8%	5.3%	11.5%	6.8%	2.4%	100.0%

SOURCE: Recht Hausrath & Associates

TABLE G.22: ALTERNATIVE 4 - CHANGES IN C-3 DISTRICT SPACE BY USE, 1990-2000
(Thousands of Gross Sq. Ft.)

	Office	Retail	Transient Hotel	Housing	Cult./Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	8,100	--	2,060	--	--	--	--	10,160
Other New Construction	--	564	--	2,945	--	--	--	3,509
Retail Space In New Office Buildings	(678)	678	--	--	--	--	--	0
New Space by Use	7,422	1,242	2,060	2,945	--	--	--	13,669
Space Demolished by Use	(587)	(425)	--	(14)	(395)	(84)	(311)	(1,816)
Conversion to Office Use	195	--	--	--	(66)	(129)	--	0
Other Changes In Use	--	--	--	--	--	--	--	--
Net Change In Space By Use	7,030	817	2,060	2,931	(461)	(213)	(311)	11,853

SOURCE: Recht Hausrath & Associates

TABLE G.23: ALTERNATIVE 4 - CHANGES IN C-3 DISTRICT IN OFFICE SPACE BY SUBAREA, 1990-2000
(Thousands of Gross Sq. Ft.)

	Subarea							Total C-3 District
	1	2	3	4	5	6	7	
Total Space in New Office Buildings	6,000	800	200	100	200	600	200	8,100
(Amount Occupied by Retail Use)	(450)	(60)	(5)	(8)	(25)	(105)	(25)	(678)
New Space for Office Uses	5,550	740	195	92	175	495	175	7,422
(Office Space Removed)	(555)	(1)	--	--	(6)	(21)	(4)	(587)
Net New Space Occupied by Office Uses	4,995	739	195	92	169	474	171	6,835
Conversions to Office Use	--	31	85	7	65	2	5	195
Changes to Other Uses	--	--	--	--	--	--	--	--
Total Additional Space Occupied by Office Uses	4,995	770	280	99	234	476	176	7,030
Percent of Total Additional Space Occupied by Office Uses	71.0%	11.0%	4.0%	1.4%	3.3%	6.8%	2.5%	100.0%

SOURCE: Recht Hausrath & Associates

TABLE G.24: ALTERNATIVE 5 - CHANGES IN C-3 DISTRICT SPACE BY USE, 1990-2000 (Thousands of Gross Sq. Ft.)

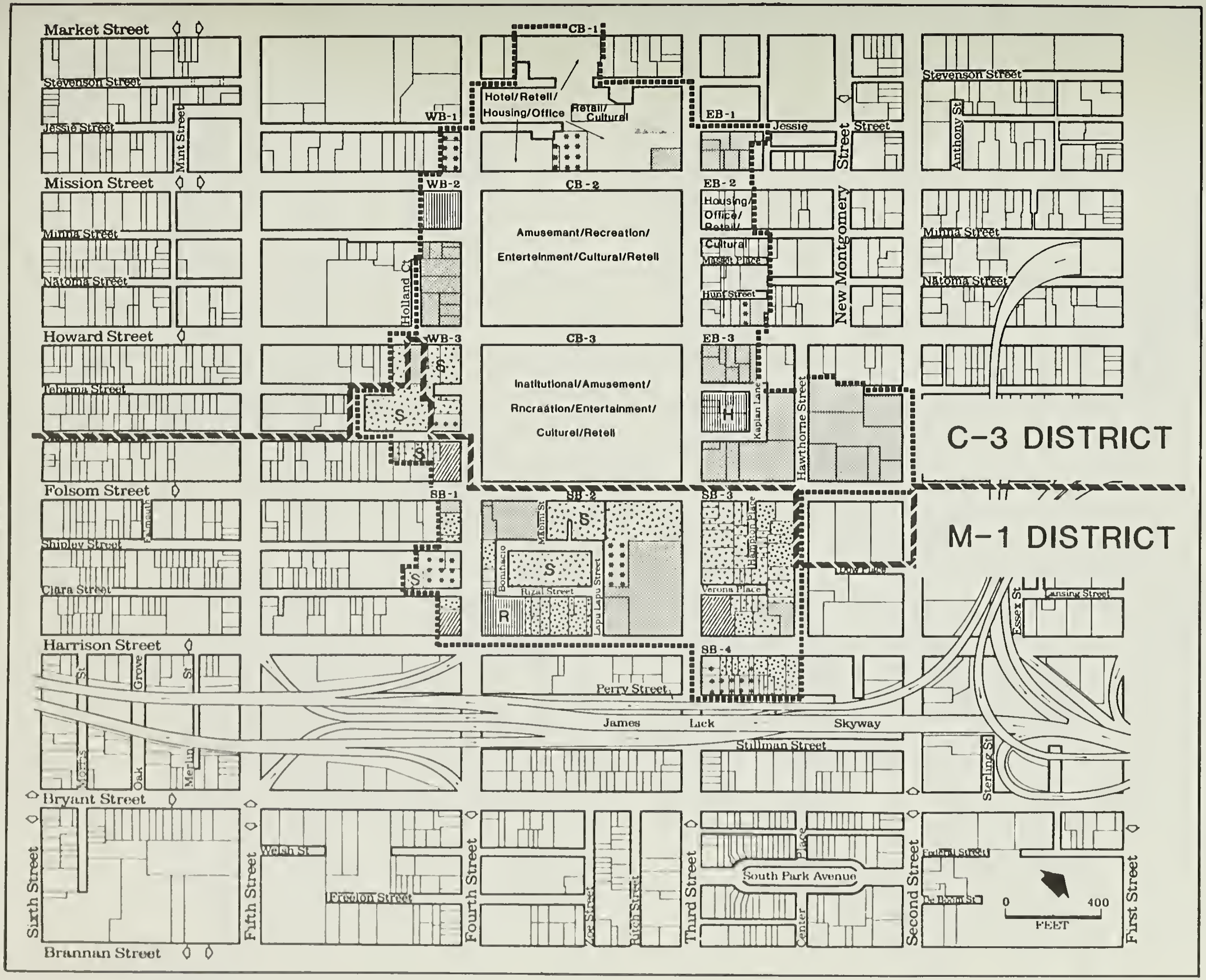
	Office	Retail	Transient Hotel	Housing	Cult./Inst./ Educ./Other	Ind./Whse./ Automotive	Parking	Total
New Construction of Office Buildings and Hotels	7,400	--	2,060	--	--	--	--	9,460
Other New Construction	--	635	--	900	--	--	--	1,535
Retail Space In New Office Buildings	(605)	605	--	--	--	--	--	0
New Space by Use	6,795	1,240	2,060	900	--	--	--	10,995
Space Demolished by Use	(552)	(416)	--	(45)	(400)	(106)	(449)	(1,968)
Conversion to Office Use	1,231	--	--	--	(314)	(917)	--	0
Other Changes In Use	(47)	--	--	--	47	--	--	--
Net Change In Space By Use	7,427	824	2,060	855	(667)	(1,023)	(449)	9,027

SOURCE: Recht Hausrath & Associates

TABLE G.25: ALTERNATIVE 5 - CHANGES IN C-3 DISTRICT OFFICE SPACE BY SUBAREA, 1990-2000 (Thousands of Gross Sq. Ft.)

	Subarea							Total C-3 District
	1	2	3	4	5	6	7	
Total Space in New Office Buildings	5,000	1,200	200	200	300	400	100	7,400
(Amount Occupied by Retail Use)	(375)	(90)	(5)	(15)	(38)	(70)	(12)	(605)
New Space for Office Uses	4,625	1,110	195	185	262	330	88	6,795
(Office Space Removed)	(519)	(2)	--	--	(6)	(23)	(2)	(552)
Net New Space Occupied by Office Uses	4,106	1,108	195	185	256	307	86	6,243
Conversions to Office Use	--	289	243	56	566	15	62	1,231
Changes to Other Uses	--	--	--	--	(47)	--	--	(47)
Total Additional Space Occupied by Office Uses	4,106	1,397	438	241	775	322	148	7,427
Percent of Total Additional Space Occupied by Office Uses	55.3%	18.8%	5.9%	3.3%	10.4%	4.3%	2.0%	100.0%

SOURCE: Recht Hausrath & Associates

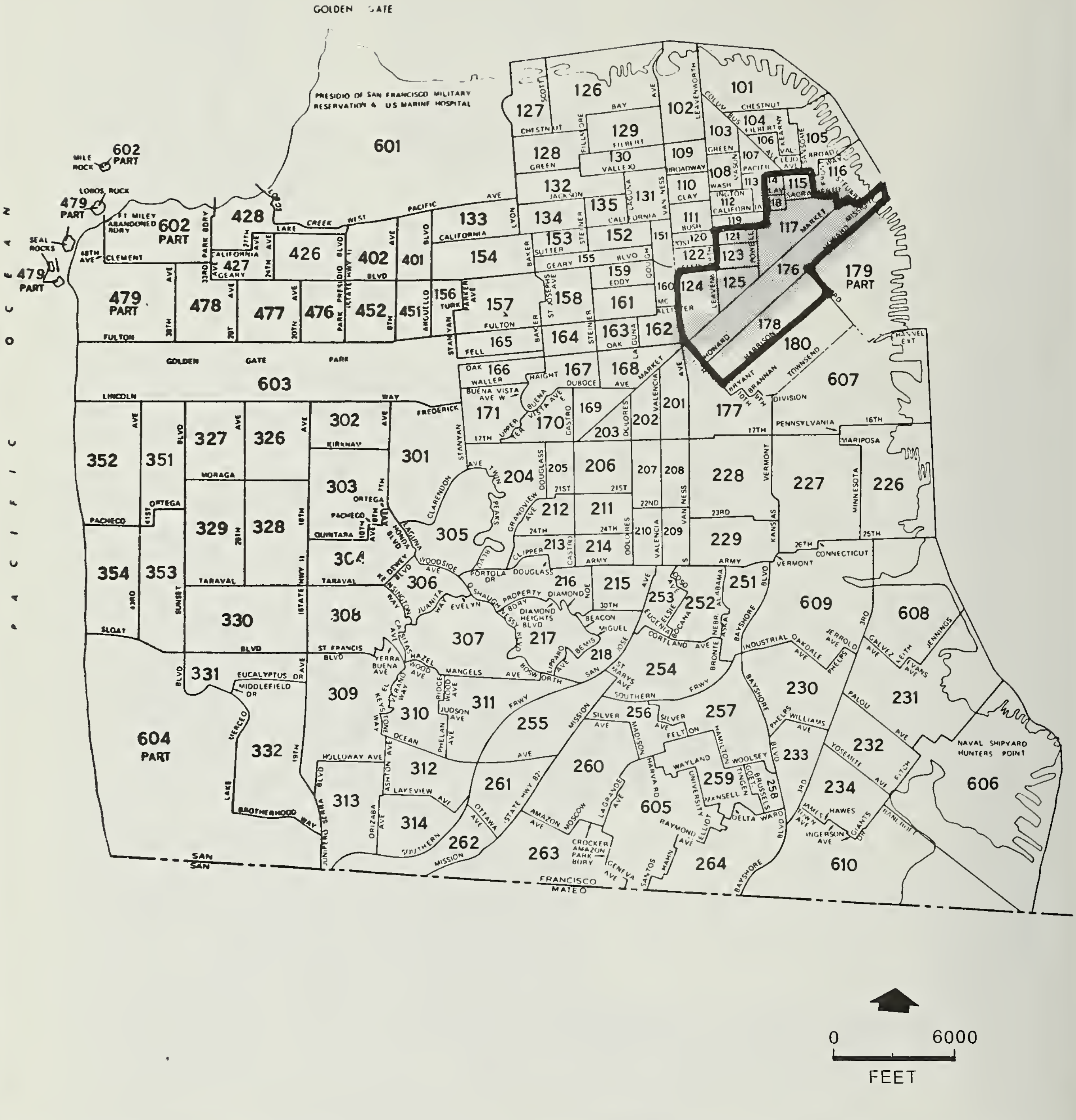


LEGEND

- ⠿ HOUSING
- S SUBSIDIZED HOUSING
- ▒ OFFICE
- ▨ RETAIL
- ☐ DOWNTOWN SUPPORT
- ⠿ LIGHT INDUSTRY
- ⁘ INSTITUTIONAL
- ☐ HOTEL
- ▥ PARKING
- H PARKING AND HOUSING
- R PARKING AND RETAIL
- ⠿ VACANT
- ┅ REDEVELOPMENT AREA BOUNDARY
- ▬ ZONING DISTRICTS

FIGURE G.2:
YBC MAIN PROGRAM ALTERNATIVE SHOWING C-3 DISTRICT BOUNDARY

SOURCE: Environmental Science Associates, Inc., using information provided by the San Francisco Redevelopment Agency



123 CENSUS TRACTS

▨ C-3 DISTRICT

FIGURE G.3:
DOWNTOWN CENSUS TRACTS USED TO IDENTIFY HOUSING UNITS IN C-3 DISTRICT

SOURCE: Recht Hausrath & Associates

APPENDIX H: BUSINESS AND EMPLOYMENT ANALYSIS

INTRODUCTION

Assessing the effects of the proposed Downtown Plan and alternative land use and development policies required analysis of business activity and employment in San Francisco's C-3 District. The analysis has two parts: estimating current employment in the C-3 District and forecasting employment growth in this area, to the year 2000.

There are several reasons why this analysis is necessary. First, no published sources report employment data for the downtown area. The principle sources of local area employment data (the State Employment Development Department and the U.S. Department of Commerce) collect and report only citywide totals for San Francisco. Second, the C-3 District share of total City employment is unknown. (Other studies present estimates of employment as a share of City totals for variously defined "downtown" areas). Third, employment statistics for the City and those used in the above-mentioned estimates of "downtown" shares provide no information on the types of business functions in various types of space. This reason is particularly important because the land use policies analyzed in this study affect businesses and employment by their direct effect on the supply of space in the C-3 District.

This Appendix provides information to support the business and employment analysis presented in Sections IV.C Environmental Setting and Impact, and VII.C.3 Alternatives. There are four sections to the Appendix: 1) C-3 District Employment: 1981, 2) C-3 District Employment Forecasts, 3) Job and Workforce Characteristics, and 4) Supplemental Tables and Maps for the Business and Employment Analysis. The sections highlight important methodological points, update information presented in the Consultant's Report Appendix H, and provide background on key elements of the employment analysis, such as the definition of business activities and the process of matching forecast employment growth to the potential supply of space. Tables that provide more detail than those provided in the EIR text are also included.

Appendix H in the Downtown EIR Consultant's Report) describes in detail the methodology for 1981 employment estimates and forecasts of employment growth and presents the factors considered in the baseline forecast of employment growth to 2000 for each business activity./1/ Appendix H of the Consultant's Report is hereby incorporated by reference in this EIR.

C-3 DISTRICT EMPLOYMENT: 1981

Approach

The employment estimates prepared to satisfy the requirements of analyzing the effects of the Downtown Plan and Alternatives were a synthesis of two data collection efforts undertaken specifically for this study:

- Downtown EIR Land Use Inventory: an inventory of the type of space in buildings in the C-3 District (described in Appendix C) and
- Downtown EIR Employer Survey: a survey of business establishments located in the C-3 District (described in Appendix F).

The Land Use Inventory identified the amount of space of each type in each subarea of the C-3 District. The inventory was also the basis for the Employer Survey sample. Analysis of the survey results identified the types of businesses and numbers of employees in various types of C-3 District space./2/

Business Activities

An important by-product of the analysis leading to estimates of C-3 District employment in 1981 was the definition of business activity groups. The estimates of 1981 C-3 District employment and all forecasts for 1984, 1990, and 2000 were prepared by analyzing the observed characteristics, growth potentials, and preferences for locations and types of space of about 20 business activity groups.

Business activity groups are used throughout this EIR and the earlier Consultant's Report to describe types of employment. These employment categories go beyond the Standard Industrial Classification (SIC) of employment by linking the SIC of an establishment with the type of space it occupies and the function carried out in that space. For example, through this analysis of the results of the Employer Survey, the sales offices of manufacturing firms were separated from their headquarters or warehouse activities. Similarly, information processing functions were distinguished from executive and management functions of large financial institutions or utilities.

The business functions within an SIC may place different values on the location and the cost of space. They may also place different values on the relative costs of labor and space and the availability of certain types of workers. It is consequently important to distinguish these activities, in order to analyze the impact of policies affecting the supply and price of space in the C-3 District.

The business activities defined in the employment analysis were grouped into seven major categories for more manageable discussion. Although the tables in the text focus on these major categories, most calculations (for both the 1981 situation and the forecasts) used the disaggregated data. Table H.1 lists all the business activities under their major category headings.

Readers should note that the names of the office business activities have been changed since the publication of the Consultant's Report. In that document, manufacturing and mining; finance, insurance and real estate; business and professional services; transportation, communication and utilities; and government offices were referred to as primary office. These business activities are now collectively called management/technical office. Similarly, wholesale and manufacturing sales, retail services, and branch banks, were collectively referred to as secondary office in the Consultant's Report. These business activities are now summarized as trade/customer service office. Only these two major category titles have changed. The employment within each category remains the same.

TABLE H.1: C-3 DISTRICT BUSINESS ACTIVITIES AND FUNCTIONS

Business Activity	Functions
Management/Technical Office	executive, administrative, information processing, and professional services
Manufacturing and Mining	
Finance, Insurance, and Real Estate	
Business and Professional Services	
Transportation, Communication and Utilities	
Government Offices	
Trade/Customer Service Office	sales, showrooms, customer services
Wholesale and Manufacturing Sales	
Retail Services	
Branch Banks	
Retail Trade	sales, eating and drinking
Retail Stores and Shops	
Restaurants and Bars	
Hotels	overnight and year-round accommodations, retail, eating and drinking
Transient	
Residence	
Cultural/Institutional/Educational	administrative, educational, entertainment, other
Education Facilities	
Non-Profits	
Theatres, Museums	
Institutional, Other	
Industrial/Warehouse/Automotive	manufacturing, warehouse, repair, storage
Industrial/Warehouse	
Automotive	
Parking	parking

SOURCE: Recht Hausrath & Associates

Building Maintenance/Security, Construction and Other Employment

Building maintenance and security personnel working in downtown buildings, construction workers, and workers (such as messengers and taxi drivers) who spend part, if not all, of their day in the C-3 District were not covered by the survey and land use inventory estimating procedure. Therefore, employment in both categories was estimated by alternative means. The employment estimate for building maintenance and security personnel (janitors, building engineers, guards) was based on the amount of occupied space in the C-3 District. Construction employment in the C-3 District comes primarily from three types of activity: new construction, conversion of existing space to other uses, and ongoing remodeling, maintenance, and repair. The estimate of construction employment accounts for each type of activity./3/

Estimates for the category of "floating" employees were not prepared because their areas of operation generally extend beyond the bounds of the C-3 District. Examples of these workers are messengers, bus and taxi drivers, and delivery persons.

Comparisons to Other Estimates

The 1981 estimates of C-3 District employment that were prepared for this study were compared to published citywide employment statistics [County Business Patterns (CBP), published by the Department of Commerce and data published by the State Employment Development Department (EDD)]. The comparison between EDD data and the results of the C-3 District employment analysis indicated a reasonable relationship between citywide and C-3 District employment in 1981. Overall, just less than half of the City's employment was in the C-3 District.

County Business Patterns, 1981 was not available for analysis in the earlier study, so data from 1979 and 1980 were used. The 1981 data was published in May, 1983. As indicated in the Consultant's Report Appendix H, CBP estimates of citywide employment are generally higher than EDD estimates. This was again the case in 1981: total employment for San Francisco, including the estimated government employment from EDD, was 596,261 according to CBP.

The CBP estimate is about six percent higher than the EDD estimate of 564,300. The 1981 estimate of C-3 District employment is 44 percent of the larger CBP estimate of citywide employment and 46 percent of the smaller EDD estimate./4/ (Both estimates of citywide employment are adjusted to include the self-employed.)

The estimates were also compared to recent estimates for a larger Downtown area prepared by the City for transportation planning purposes and presented in "Working Paper I, Downtown Transportation Improvement Program", (San Francisco Department of City Planning, May 1982)./5/ While the number from each set of estimates (C-3 District and the larger Downtown) are not directly comparable because of differences in geographic coverage, timing and definition, the percentages of City employment represented by each of the areas are fairly comparable. The share of City employment in the Downtown and in the C-3 District is relatively consistent across the various industrial categories, and the differences in magnitude are in the expected direction. This consistency points to the underlying reliability of the data given that the estimates were derived in different ways./5/

C-3 DISTRICT EMPLOYMENT FORECASTS

Approach

There are two parts to the employment forecast methodology used in this analysis. One is a baseline forecast of employment growth in the C-3 District in each business activity and function from 1981 to 2000. The other is a process of matching forecast employment growth with estimates of space supplied under the land use policies embodied in the Downtown Plan and the Alternatives. This section highlights the critical elements of the methodology./6/

The baseline forecast is a set of employment growth projections for the years 1990 and 2000. Forecasts were prepared for each business activity and for different functions within certain business activities. The forecasts are specific to the C-3 District and may be considered to represent the long-term underlying demand for space to the year 2000, given a certain set of market conditions.

The real estate market conditions assumed for the baseline forecasts are those that have prevailed since the early 1960's. In terms of space supply and rents, this assumption implies that, as in the recent past, sites in the core of the C-3 District (essentially the financial district) would continue to be more intensively developed; the boundaries of this core area would expand; some large-scale single-tenant and speculative office development would occur on large sites in more outlying areas; and that, given this long-term supply potential, rents would remain at about their current levels, in real terms./7/

The policies in the Plan and the Alternatives affect both the supply (amount and location) and cost of space. They consequently affect the amount and type of employment growth that occurs in the C-3 District. In the process of matching employment growth and potential space supplied under each set of land use policies and resulting real estate market conditions, the baseline employment forecast (the level of demand for space under the least constrained of all of the situations analyzed) provided a measure for evaluating the effects of the more constrained situations. This matching analysis resulted in the forecast of employment for the Downtown Plan and the five Alternatives, for each business activity and function.

Baseline Employment Forecasts/Demand for Space

Baseline employment forecasts were used in this methodology to estimate demand for space in the C-3 District, for the period 1981-2000. Forecasts were prepared for 1990 and 2000 for each business activity and for functions within business activities when relevant. These distinctions were possible because of the analysis of current (1981) C-3 District employment, discussed in the preceding section of this Appendix. To establish a 1984 setting, the annual compound growth rate for the nine-year period 1981 to 1990 was applied to the three years 1981 to 1984. Depending on the timing of recovery from the 1982-1983 recession, 1984 employment could be below that forecast for the 1984 setting. This study takes a long-term perspective and does not specifically address the timing of business cycles.

Table H.2 shows forecast C-3 District employment growth for each business activity for the period 1981 to 2000. In general, the forecasts for each business activity and function considered the following:

- Downtown EIR Employer Survey results
- C-3 District business activities and functions
- historical employment trends
- retail sales trends
- visitor activity trends
- recent and proposed development in the C-3 District
- relationship among business activities (e.g. office activity supports retail and hotel)
- competitive business locations
- industry trends relevant to specific business activities
- other local and regional employment forecasts
- international, national and regional market forces and
- regional and local labor supply, housing markets and transportation systems

The baseline forecasts for each business activity and function were based on analysis of factors specific to each group. Relationships between groups, such as the dependence of retail employment growth on office employment and tourist activity, were also considered./8/

C-3 District Employment Forecasts for the Downtown Plan and Alternatives

The proposed Downtown Plan and Alternatives affect employment in the C-3 District indirectly, by means of their effect on development potential in the area. The employment forecasts are the result of an analytical process in which the demand for space to accommodate forecast employment growth was matched with the potential supply of space, considering the amount, location, and cost of potential new development likely under each set of policies. Figure H.1 is a diagram of the "matching" process.

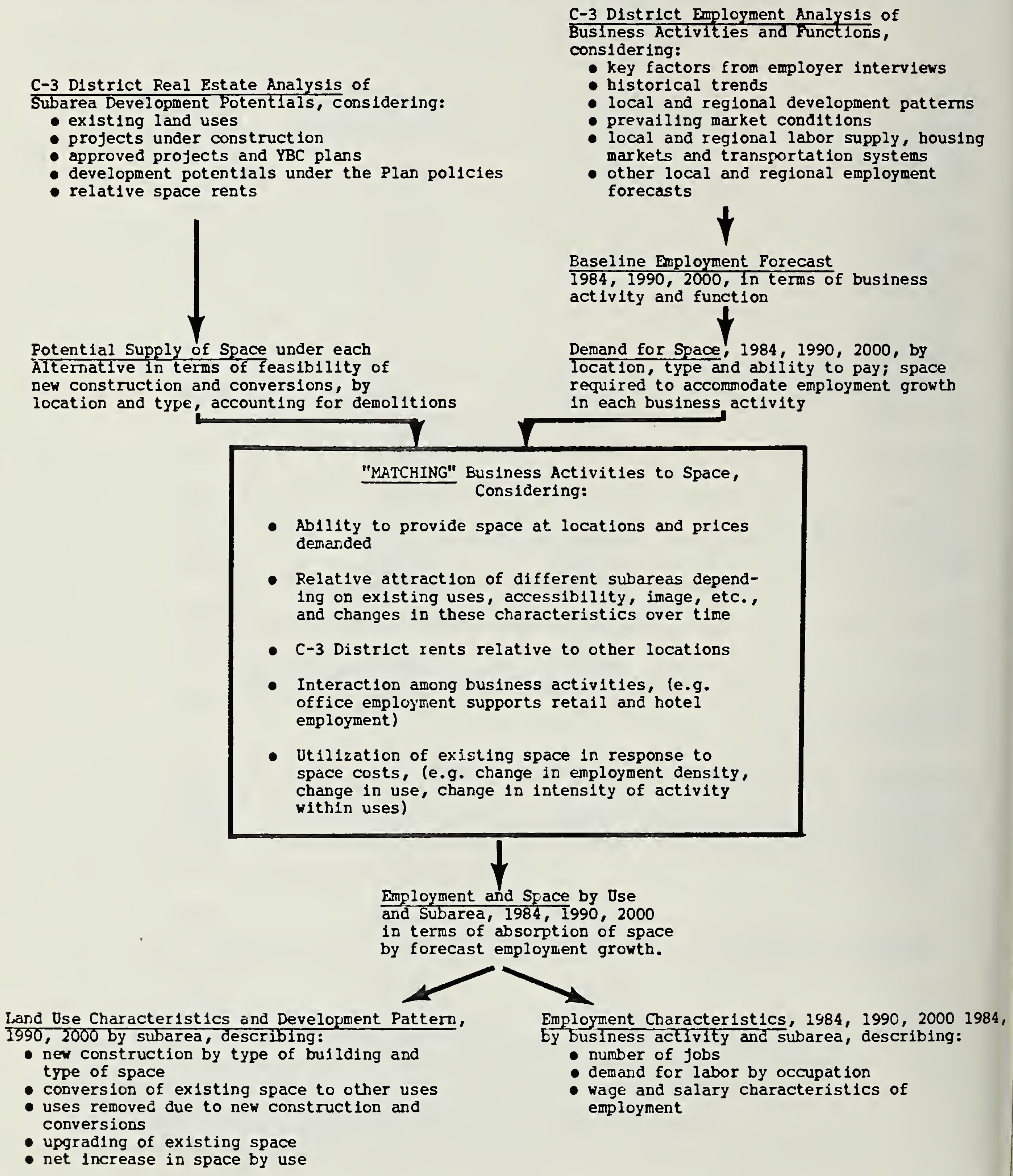
TABLE H.2: BASELINE FORECAST OF C-3 DISTRICT EMPLOYMENT GROWTH POTENTIALS

Business Activity	Forecast 2000 Employment	Employment Growth 1981-2000	Growth Rate 1981-2000
Primary Office	261,540	88,990	2.2%
Manufacturing and Mining	29,000	10,780	2.5%
Finance, Insurance Real Estate	98,630	30,050	1.9%
Business and Professional Services	84,750	44,100	3.9%
Transportation, Communications, Utilities	35,890	7,150	1.2%
Government Office	13,270	-3,090	-1.1%
Secondary Office	54,320	19,550	2.4%
Wholesale and Manufacturing Sales	24,050	10,810	3.2%
Retail Services	22,650	6,350	1.7%
Branch Banks	7,620	2,390	2.0%
Retail Trade	29,040	6,850	1.4%
Hotels	20,570	7,270	2.3%
Cultural/Institutional/Educational	10,140	2,010	1.2%
Non-Profit and Educational Facilities	3,990	1,540	2.6%
Theaters, Museums, Amusements, Institutions, Private Clubs	6,150	470	0.4%
Industrial/Warehouse/Automotive/Parking	3,740	-3,190	-3.2%
TOTAL	379,360	121,490	2.05%

NOTE: The growth rate is the annual compound percentage rate of growth from 1981 to 2000. The employment growth shown here accounts for only those activities included in the baseline forecast. Building maintenance and construction employment are not included in the baseline forecast and are both forecast by other methods; growth depends primarily on the amount of building activity under each Alternative.

SOURCE: Recht Hausrath & Associates

FIGURE H.1: DIAGRAM OF PROCESS OF DEVELOPING C-3 DISTRICT EMPLOYMENT AND LAND USE DEVELOPMENT FORECASTS FOR THE DOWNTOWN PLAN



C-3 District Real Estate Analysis of Subarea Development Potentials, considering:

- existing land uses
- projects under construction
- approved projects and YBC plans
- development potentials under the Plan policies
- relative space rents

Potential Supply of Space under each Alternative in terms of feasibility of new construction and conversions, by location and type, accounting for demolitions

C-3 District Employment Analysis of Business Activities and Functions, considering:

- key factors from employer interviews
- historical trends
- local and regional development patterns
- prevailing market conditions
- local and regional labor supply, housing markets and transportation systems
- other local and regional employment forecasts

Baseline Employment Forecast 1984, 1990, 2000, in terms of business activity and function

Demand for Space, 1984, 1990, 2000, by location, type and ability to pay; space required to accommodate employment growth in each business activity

"MATCHING" Business Activities to Space, Considering:

- Ability to provide space at locations and prices demanded
- Relative attraction of different subareas depending on existing uses, accessibility, image, etc., and changes in these characteristics over time
- C-3 District rents relative to other locations
- Interaction among business activities, (e.g. office employment supports retail and hotel employment)
- Utilization of existing space in response to space costs, (e.g. change in employment density, change in use, change in intensity of activity within uses)

Employment and Space by Use and Subarea, 1984, 1990, 2000 in terms of absorption of space by forecast employment growth.

Land Use Characteristics and Development Pattern, 1990, 2000 by subarea, describing:

- new construction by type of building and type of space
- conversion of existing space to other uses
- uses removed due to new construction and conversions
- upgrading of existing space
- net increase in space by use

Employment Characteristics, 1984, 1990, 2000 1984, by business activity and subarea, describing:

- number of jobs
- demand for labor by occupation
- wage and salary characteristics of employment

SOURCE: Recht Hausrath & Associates

Conceptual Perspective

The "matching" process is a qualitative model of the market resolution of demand and supply factors affecting growth in downtown San Francisco. The perspective is that of business activities (firms or functions within firms) evaluating a location in the C-3 District. The baseline forecast of employment growth identifies the space required to accommodate the potential growth of business activities, each with different preferences for a C-3 District location and different abilities and willingness to pay rent there. The Plan and Alternatives offer different space supply potentials in terms of the amount, location, type, and cost of newly constructed or converted space.

The result of the matching process identifies the business activities that would choose to locate in the C-3 District given the space and rent options available under the Plan and each Alternative. Consideration of rents is critical to this process since rent is the means by which the market allocates space among users. The effects of the various land use policies and zoning controls on space are translated into differences in rents. For example, rents would be higher if the costs of construction or development were higher and tenants were willing to pay higher rents. Rents would also be higher if less space were built in a desirable location and there were users willing to pay more to outbid others because of strong preferences for that location. The matching analysis considers which business activities would pay higher rents and which would not.

Consideration of locations outside the C-3 District is also incorporated in this matching process. Whether business activities would pay the rents for C-3 District locations depends on the rents in other locations and the relative preferences placed on each locational option. The differences in employment among the Plan and Alternatives reflect the outcome of this process. For example, the lower employment under one Alternative as compared to another reflects the fact that some business activities would reach the point where they would not pay the rents for a C-3 District location but would instead locate outside the C-3 District. The differences in employment by business activity identify how each activity would respond to this type of situation. Table H.4 in the Supplemental Tables to this Appendix summarizes the locational preferences of the different business activities and the impact of the Plan and Alternatives on each.

Detailed forecasts have not been prepared to identify specifically where business activities would locate if not in the C-3 District. The text discussion describes the types of locations which each might accept. It points out that based on preferences, many could locate elsewhere in San Francisco outside the C-3 District, depending on the land use policies in those areas.

Step-by-Step Procedures

The baseline forecast of employment growth in each business activity was the starting point in this analytical process. In successive steps, the baseline employment forecasts for 1984, 1990, and 2000 were compared with the potential supply of space so that forecasts for the Plan and Alternatives would be developed for each of these three years./9/ For each set of policies, the employment forecasts were first compared with the space to be added by projects under construction, then with space in projects that are already approved and in Yerba Buena Center, and then with space in other new development as likely under the policies of the proposed Plan and each of the five Alternatives./10/ The result of this matching process was a forecast of employment and space by business activity/land use and subarea for the C-3 District in 1984, 1990, and 2000 under the Plan and each Alternative.

The matching process as outlined above was used primarily for the office and hotel forecasts. For business activities, additional analysis was done to complete the forecasts. The other factors considered in the retail, construction and other forecasts are summarized in the following paragraphs.

Retail Forecast

Forecasts of retail employment and space were based on a forecast of retail sales growth in the C-3 District from 1981 to 2000. The forecast of retail sales growth was completed after the forecasts of office and hotel employment and space described by the matching process, because retail sales in the C-3 District are dependent on the results for the other sectors. In particular, the retail forecast for the C-3 District depends on growth in office employment and on increases in tourist spending in the C-3 District.

The sources of C-3 District sales can be broadly grouped into three categories:

- C-3 District workers;
- tourists;
- others, including San Francisco residents and other Bay Area residents who do not work in the C-3 District but do some shopping there.

The forecast of retail sales growth is based on projected growth for each of these sources of C-3 District retail sales. First, however, the contribution each group currently makes to C-3 District retail sales was established. These estimates were made using spending patterns identified in the 1975 SPUR study, "Impact of Intensive High-Rise Office Development on San Francisco", the 1977 Census of Retail Trade, Taxable Retail Sales data, and San Francisco Convention and Visitors Bureau data for 1981.

Baseline forecasts of retail sales growth were prepared for each of the above-described sources. Average retail sales per C-3 District worker were assumed to remain constant over time and the amount of sales to increase in proportion to the employment growth in all business activities forecast under the baseline assumptions. Retail sales growth due to tourism was forecast assuming sales increased in proportion to the employment forecast for transient hotels. Retail sales attributable to spending by Bay Area residents and other visitors was forecast to increase. For City residents, the characteristics of the population were considered, including incomes and spending patterns. These same factors were considered for residents of the region, as was the attractiveness of C-3 District business establishments relative to other shopping options.

The baseline forecast of C-3 District retail sales growth from all of these sources reflects an annual compound growth rate of 2.4 percent, in constant dollars. This forecast assumes that the relative attraction of the downtown retail core continues to increase over time. Employment in retail establishments is assumed to grow at a slower pace than sales, about 1.4 percent per year, compounded. Sales per sq. ft. and sales per employee are assumed to increase over time. For the 1984 setting, these sales and employment forecasts were matched with retail space in projects under construction, according to assumptions about sales per sq. ft. and employment densities in retail space. A similar process of matching sales with retail space in approved and YBC projects resulted in the 1990 forecast of sales, employment and space.

For the Plan and Alternative forecasts, it was assumed that the amount of retail spending by residents and other visitors would not vary for the Plan or any of the Alternatives. The tourist component of C-3 District retail spending would vary by a small amount as a function of differences in the growth of C-3 District hotel rooms. Retail sales would be lower for land use policies under which C-3 District employment and, consequently, retail spending by C-3 District workers, is forecast to be lower. The effect of the C-3 District policies on employment growth is thus the most important factor in the different retail sales forecasts for the Plan and Alternatives.

Construction and Other Business Activities

Construction and building maintenance employment, as well as employment in industrial, warehouse, automotive, parking and miscellaneous business and retail service activities were less dependent on the matching process itself. Employment growth in construction activities was estimated as a function of the total new building, conversion and upgrading activity that would occur under the Plan and each Alternative. (See Table H.11 in Supplemental Tables for the Business and Employment Analysis.) Building maintenance and security employment was calculated according to the total square footage of space in the year 2000, under the Plan and each Alternative.

Lastly, forecasts of industrial, warehouse, automotive, parking and miscellaneous business and retail service employment were treated as residuals of the matching process. C-3 District employment in these activities is expected to decline as demand for space from other uses increases. Forecasts for the year 2000 were developed based on both the displacement of these uses for new construction and the conversion to office use of space occupied by these activities.

Comparisons With Other Forecasts

Employment forecasts have been prepared recently for the City and for the Downtown area (the area including the C-3 District, South of Market, Civic Center, Northern Waterfront, and the Washington/Broadway Special Use District as shown on the map in Figure H.2). The citywide forecasts were prepared by the Association of Bay Area Governments (ABAG) based on an analysis of historical trends for employment in the City and the region. The Downtown area forecasts were prepared by the Department of City Planning based on the shares of citywide employment growth (from the ABAG forecast) expected to occur in the Downtown area./11/

Review of these forecasts indicates that there are differences among them. In terms of the overall amount and rate of employment growth, the C-3 District forecasts prepared for this EIR are more optimistic about future growth than are the Downtown and citywide forecasts based on ABAG's analysis. Although the C-3 District is included within the Downtown area and the City totals, the C-3 District employment growth forecasts are higher or as high as the growth forecast for these larger areas. The differences in the forecasts are highlighted by comparison of the forecasts for different economic sectors. The largest differences are in four sectors: manufacturing, wholesale trade, services, and transportation, communications, and utilities (TCU). The forecasts for retail trade, government and finance, insurance and real estate (FIRE) are more similar.

ABAG published updated forecasts of regional population, housing and employment in June 1983, after the Consultant's Report was completed./12/ These revised forecasts were reviewed during preparation of the Downtown Plan EIR. For San Francisco, the revised ABAG forecasts to the year 2000 show slower rates of growth than the earlier ABAG citywide forecasts. Consequently, the C-3 District forecasts appear even higher, in comparison. If ABAG forecasts more closely predict actual employment in 2000, other impacts analyzed in this EIR that derive from employment figures would be proportionally less than predicted in this EIR.

JOB AND WORKFORCE CHARACTERISTICS: 1981 AND FORECAST

Approach

The Business and Employment Setting discusses the characteristics of C-3 District workers from two perspectives. The first is that of the types of jobs (occupations and wages and salaries) located in the C-3 District. The second is that of the types of workers (individual and household demographics) employed in the C-3 District. This section of the Appendix reviews the methodology for the 1981 estimates, provides more detailed tables than those presented in the text, and explains the basis for the forecasts of future C-3 District job characteristics./13/

C-3 District Job Characteristics: 1981

The Downtown EIR Employer Survey was the source of information on the types of employment located in the C-3 District. Typical jobs in the survey's occupation categories are listed below:

- Professional, technical or similar worker: accountant, computer specialist, lawyer, social worker, musician, actor, medical personnel, labor or personnel relations.
- Manager or administrator: bank officer or financial manager, buyer or shipper, or any type of office, personnel or sales manager.
- Clerical or similar worker: bank teller, counter clerk, bookkeeper, administrative assistant, vehicle dispatcher, receptionist or secretary, typist or keypunch operator.
- Crafts or similar worker: carpenter, printer, electrician, mechanic or automobile repair.
- Operative or similar worker: dressmaker, service station attendant, machine operator, delivery person, truck or bus driver.

- Sales worker: real estate agent or broker, sales clerk, insurance stocks or bond seller.
- Service worker: cleaner, janitor, waiter or waitress, welfare service aid or watchman.

Appendix H in the Consultant's Report includes tables that present more detailed distributions of occupations and wages and salaries for C-3 District employment than are shown in the EIR text (Table IV.C.7). The detail is presented only for business activities in office space, however. Office employment dominates the description of job characteristics in the C-3 District. The survey sample size for the industry components of management/technical and trade/customer service office are large enough to show detailed distributions. The distributions for the non-office categories are shown in Table IV.C.7 in the EIR text. There are no important distinctions to be made within either the retail trade or hotel categories, and the sample sizes of establishments in the cultural/institutional/educational and industrial/automotive/parking categories are too small to show more detail.

Forecasts of Job Characteristics

The survey results indicated large variation in occupations and wages/salaries between business activities. These differences are greater than the changes which might be assumed to occur within a business activity over time. Moreover, there are no historical data from which to measure trends in changes in job characteristics within business activities. Much of the change in occupational and wage/salary mix downtown has occurred because the mix of business activities (jobs with various characteristics) has changed.

The distributions of occupations and wages/salaries within a business activity group identified in the survey were not assumed to change over time. The overall distribution of occupations and wages/salaries in the forecast years (1990 and 2000) does change, however, as the mix of business activities (each with different distributions) changes. If the occupation mix within business activities were to change (due to technological changes or increased specialization of C-3 District functions within the functional categories of the business activities, for example) then the forecast changes in job characteristics between 1981 and 2000 would be greater than estimated in this report. To some extent, the presence of such trends could be offset by the availability of workers with certain backgrounds and characteristics, effectively resulting in the distributions forecast here. This could be true since the availability of labor has some affect on the location and expansion decisions of business activities.

NOTES - Appendix H

/1/ "Growth Management Alternatives for Downtown San Francisco: Downtown EIR Consultant's Report", prepared by Environmental Science Associates, Inc., May 1983.

/2/ The data used to identify current conditions of space use and employment reflect the 1981/1982 situation. The Downtown EIR Land Use Inventory was conducted from late 1981 through early 1982. The Downtown EIR Employer Survey was conducted from January, 1982 through September, 1982. Both space and employment in the C-3 District are constantly changing; therefore it is difficult to specify a date for the current situation estimates. On balance, the estimates that result from the employment analysis are most comparable to other employment data for 1981.

The detailed estimating procedures are described in Appendix H of the Consultant's Report, pp.H.3-H.6,

/3/ The methodologies used to estimate building maintenance and security personnel as well as construction employment are described in more detail in Appendix H of the Consultant's Report, pp. H.11-H.13.

/4/ The reasons for differences between CBP and EDD data are discussed in Appendix H of the Consultant's Report, pp. H.14-H.15.

/5/ See the Consultant's Report, Appendix H, pp. H.14-H.17, for more detailed discussion of comparisons between the various employment estimates.

/6/ For more detailed descriptions, see Appendix H of the Consultant's Report, pp. H.18-H.54.

/7/ These market conditions would be the likely outcome of Alternative 1 policies in the C-3 District. Therefore, the baseline forecast is the employment forecast for Alternative 1. Market conditions in the C-3 District would not be the same under the proposed Downtown Plan or

NOTES - Appendix H (Continued)

any of the other Alternatives (Alternatives 2-5). The Plan and Alternatives 2 through 5 constrain C-3 District development, relative to the baseline, though not all to the same degree.

/8/ Appendix H of the Consultant's Report contains summaries of the forecasts for each of the twelve major office and other business activities. These summaries highlight important components of the forecast and list the key factors used in the analysis. (See the Consultant's Report, Appendix H, pp. H.22-H.34.)

/9/ It is important to understand that the forecasting methodology follows the logic that space is built to accommodate employment growth and not vice versa. Constraints on the supply of space can lower employment growth, but a lack of constraints on new development cannot result in more employment growth than is supported by other economic market factors.

/10/ See Section IV.B Land Use and Real Estate Development Setting and Impact and Appendix G for description of the space in projects under construction, approved, and in Yerba Buena Center, and for an explanation of the real estate analysis of development potentials under the Plan. Section V.B. of the Consultant's Report describes the development potentials under the five Alternatives. The process of matching employment growth and space involved the use of employment densities to convert jobs into space and incorporated consideration of a vacancy factor so that the amount of space needed to accommodate a given amount of employment growth exceeded the space to be occupied by the increased number of workers.

A more detailed discussion in Appendix H of the Consultant's Report (pp. H.37-H.41) highlights the important steps and conclusions drawn from this analysis.

/11/ Appendix H (pp. H.48-H.54) of the Consultant's Report compares these two forecasts and the C-3 District employment forecasts prepared for this study. See in particular Tables H.9 and H.10.

/12/ See Association of Bay Area Governments, Projections '83: Forecasts for the San Francisco Bay Area, 1985, 1990, 1995, 2000, June 1983.

/13/ A more detailed discussion appears in Appendix H of the Consultant's Report, pp. H.54-H.60.

SUPPLEMENTAL TABLES AND MAPS FOR THE BUSINESS AND EMPLOYMENT ANALYSIS

TABLE H.3: C-3 DISTRICT BUSINESS ACTIVITIES AND EMPLOYMENT DENSITIES, 1981

Business Activity	Employment Densities (a)
Management/Technical Office	276 (b)
Manufacturing and Mining	366
Finance, Insurance, and Real Estate	222
Business and Professional Services	315
Transportation, Communication and Utilities	299
Government Offices	266
Trade/Customer Service Office	208 (b)
Wholesale and Manufacturers Sales	232
Retail Services	178
Branch Banks	240
Retail Trade	350
Retail Stores and Shops	442
Restaurants and Bars	200
Hotels	908
Transient	759 (c)
Residence	2,498
Cultural/Institutional/Educational	777
Education Facilities	758
Non-Profits	546
Theaters, Museums Institutional, Other	828
Industrial/Warehouse/Automotive	783
Industrial/Warehouse	661
Automotive	2,335
Parking	5,100 (d)

TABLE H.3: C-3 DISTRICT BUSINESS ACTIVITIES AND EMPLOYMENT DENSITIES, 1981 (Continued)

(a) Gross square feet of occupied building space per employee. Does not include allowance for vacant, unoccupied space.

(b) All office activities together (management/technical and trade/customer service) average 265 gross sq. ft. per employee.

(c) Transient hotels average 0.74 employees per room.

(d) Gross square feet of parking space in lots and buildings.

SOURCE: Recht Hausrath & Associates

TABLE H.4: CHANGES IN C-3 DISTRICT OFFICE EMPLOYMENT BY BUSINESS ACTIVITY FOR THE DOWNTOWN PLAN AND ALTERNATIVES, 1990-2000

	1990-2000						
		Alternatives					
Office Activities	Downtown Plan	1	2	3	4	5	Comments Regarding Impacts
Manufacturing and Mining Headquarters	5,600	6,300	6,200	5,900	5,500	5,400	High preference for central C-3 District location. They are the least effected by the differences in land use policies.
FIRE Executive and Management Functions	7,300	8,750	8,530	8,370	6,900	7,000	Fairly strong preference for a central location. Some relationship to location of information processing function.
FIRE Administrative and Information Processing	3,100	6,020	5,730	5,220	1,300	2,400	Very sensitive to space costs.
TCU Utilities	(800)	(50)	(120)	(350)	(1,200)	(1,100)	Sensitive to space costs.
TCU Non-Utilities	3,400	4,230	4,020	3,950	3,100	3,200	These three groups each have a mix of types of activities with varying preferences and rent paying abilities. Smaller firms and lower rent-payers would be affected first. Others show stronger preferences for a C-3 District location.
Business and Professional Services	18,400	21,690	20,580	19,330	16,930	16,980	
Wholesale and Manufacturing Sales	4,990	6,160	5,790	5,430	4,630	4,850	
Retail Services	2,640	3,620	3,300	3,060	2,050	2,530	Fairly sensitive to space costs although many need to be accesible to customers and clients.

TABLE H.4: CHANGES IN C-3 DISTRICT OFFICE EMPLOYMENT BY BUSINESS ACTIVITY FOR THE DOWNTOWN PLAN AND ALTERNATIVES, 1990-2000 (Continued)

	1990-2000						
		Alternatives					
Office Activities	Downtown Plan	1	2	3	4	5	Comments Regarding Impacts
Government	(1,630)	(1,630)	(1,630)	(1,630)	(1,630)	(1,630)	Those in leased space are price sensitive and eventually leave the study area. Much of what remains is in government buildings.
Branch Banks	1,070	1,370	1,330	1,260	960	1,030	Differences reflect differing demands for banking as a function of office growth in the other categories.
Total Office	44,070	56,460	53,730	50,540	38,540	40,660	

SOURCE: Recht Hausrath & Associates

TABLE H.5: C-3 DISTRICT PERMANENT EMPLOYMENT BY BUSINESS ACTIVITY, 1981, 1984, 1990

Business Activity	1981		1984		1990	
	No.	%	No.	%	No.	%
Management/Technical Office	172,550	65.6	185,870	66.2	216,220	67.0
Trade/Customer Service Office	34,770	13.2	37,350	13.3	43,180	13.4
Retail	22,190	8.4	23,200	8.3	25,370	7.9
Hotel	13,300	5.1	13,820	4.9	16,320	5.1
Cultural/Institutional/ Educational	8,130	3.1	8,340	3.0	9,290	2.9
Industrial/Warehouse Automotive/Parking	6,930	2.6	6,500	2.3	5,640	1.7
Building Maintenance/ Security	5,200	2.0	5,780	2.0	6,510	2.0
TOTAL	263,070	100.0	280,860	100.0	322,530	100.0

NOTE: See Table H.11 for construction employment

SOURCE: Recht Hausrath & Associates

TABLE H.6: C-3 DISTRICT PERMANENT EMPLOYMENT FORECASTS BY BUSINESS ACTIVITY FOR THE DOWNTOWN PLAN AND ALTERNATIVES, 2000

	2000											
			Alternative									
Business Activity	Downtown Plan		1		2		3		4		5	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Management/Technical Office	251,590	67.6	261,540	67.6	259,530	67.6	257,010	67.7	247,120	67.2	248,470	67.4
Trade/Customer Service Office	51,880	13.9	54,320	14.0	53,600	13.9	52,930	13.9	50,820	13.8	51,590	14.0
Retail	27,820	7.5	29,040	7.5	28,960	7.5	28,460	7.5	28,000	7.6	28,030	7.6
Hotel	19,920	5.4	20,570	5.3	20,570	5.4	20,570	5.4	20,210	5.5	20,210	5.5
Cultural/Institutional/Educational	9,290	2.5	10,140	2.6	9,890	2.6	9,890	2.6	9,110	2.5	9,260	2.5
Industrial/Warehouse Automotive/Parking	4,390	1.2	3,740	1.0	3,740	1.0	3,300	0.9	5,270	1.4	4,120	1.1
Building Maintenance/Security	7,230	1.9	7,880	2.0	7,780	2.0	7,600	2.0	7,110	2.0	7,140	1.9
TOTAL	372,120	100.0	387,230	100.0	384,070	100.0	379,760	100.0	367,640	100.0	368,820	100.0

NOTE: See Table H.11 for construction employment.

SOURCE: Recht Hausrath & Associates

TABLE H.7: CHANGES IN C-3 DISTRICT PERMANENT EMPLOYMENT BY BUSINESS ACTIVITY FOR THE DOWNTOWN PLAN AND ALTERNATIVES, 1981-2000

Business Activity	1981-1984		1984-1990		1990-2000											
					Downtown Plan		Alternative									
							1		2		3		4		5	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Management/Technical Office	13,320	74.9	30,350	72.8	35,370	71.3	45,320	70.0	43,310	70.4	40,790	71.3	30,900	68.5	32,250	69.7
Trade/Customer Service Office	2,580	14.5	5,830	14.0	8,700	17.5	11,140	17.2	10,420	16.9	9,750	17.0	7,640	17.0	8,410	18.2
Retail	1,010	5.7	2,170	5.2	2,450	4.9	3,670	5.7	3,590	5.8	3,090	5.4	2,630	5.8	2,660	5.7
Hotel	520	2.9	2,500	6.0	3,600	7.3	4,250	6.6	4,250	6.9	4,250	7.4	3,890	8.6	3,890	8.4
Cultural/Institutional/ Educational	210	1.2	950	2.3	--	--	850	1.3	600	1.0	600	1.1	(180)	(0.4)	(30)	(0.1)
Industrial/Warehouse/ Automotive/Parking	(430)	(2.4)	(860)	(2.1)	(1,250)	(2.5)	(1,900)	(2.9)	(1,900)	(3.1)	(2,340)	(4.1)	(370)	(0.8)	(1,520)	(3.3)
Building Maintenance/ Security	580	3.2	730	1.8	720	1.5	1,370	2.1	1,270	2.1	1,090	1.9	600	1.3	630	1.4
TOTAL	17,790	100.0	41,670	100.0	49,590	100.0	64,700	100.0	61,540	100.0	57,230	100.0	45,110	100.0	46,290	100.0

NOTE: See Table H.11 for construction employment.

SOURCE: Recht Hausrath & Associates

TABLE H.8: C-3 DISTRICT EMPLOYMENT BY SUBAREA, 1981, 1984, 1990

Subarea	1981		1984		1990	
	No.	%	No.	%	No.	%
1	139,660	54.1	151,680	55.1	178,600	56.5
2	19,250	7.5	20,620	7.5	22,960	7.3
3	10,560	4.1	12,320	4.5	13,850	4.4
4	15,350	6.0	15,360	5.6	15,410	4.9
5	26,200	10.2	27,030	9.8	30,670	9.7
6	36,430	14.1	37,600	13.7	43,480	13.7
7	10,420	4.0	10,470	3.8	11,050	3.5
Total by Subarea	257,870	100.0	275,080	100.0	316,020	100.0
Unallocated	5,200		5,780		6,510	
TOTAL	263,070		280,860		322,530	

NOTE: Includes permanent employment only, of which building maintenance/security is not allocated by subarea. See Table H.11 for construction employment, also unallocated.

SOURCE: Recht Hausrath & Associates

TABLE H.9: C-3 DISTRICT EMPLOYMENT FORECASTS BY SUBAREA FOR THE DOWNTOWN PLAN AND ALTERNATIVES, 2000

Subarea	Downtown Plan		Alternative									
			1		2		3		4		5	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	201,350	55.2	209,100	55.1	206,650	55.0	202,350	54.5	206,180	57.2	203,120	56.1
2	32,790	9.0	31,250	8.2	31,380	8.3	29,200	7.8	26,590	7.4	28,400	7.9
3	16,880	4.6	19,530	5.2	19,520	5.2	20,410	5.5	15,690	4.4	16,100	4.5
4	17,940	4.9	17,610	4.7	17,500	4.7	18,790	5.0	16,960	4.7	17,570	4.9
5	35,960	9.8	38,440	10.1	38,160	10.1	39,150	10.5	34,060	9.4	35,930	9.9
6	48,420	13.3	50,460	13.3	50,230	13.3	49,800	13.4	49,010	13.6	48,530	13.4
7	11,550	3.2	12,960	3.4	12,850	3.4	12,460	3.3	12,040	3.3	12,030	3.3
Total by Subarea	364,890	100.0	379,350	100.0	376,290	100.0	372,160	100.0	360,530	100.0	361,680	100.0
Unallocated	7,230		7,880		7,780		7,600		7,110		7,140	
TOTAL	372,120		387,230		384,070		379,760		367,640		368,820	

NOTE: Includes permanent employment only, of which building maintenance/security is unallocated. See Table H.11 for construction employment, also unallocated.

SOURCE: Recht Hausrath & Associates

TABLE H.10: CHANGES IN C-3 DISTRICT EMPLOYMENT BY SUBAREA FOR THE DOWNTOWN PLAN AND ALTERNATIVES, 1981-2000

					1990-2000											
							Alternative									
Subarea	1981-1984		1984-1990		Downtown Plan		1		2		3		4		5	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	12,020	69.8	26,920	65.8	22,750	46.6	30,510	48.2	28,060	46.5	23,760	42.4	27,580	62.1	24,530	53.8
2	1,370	8.0	2,340	5.7	9,830	20.1	8,290	13.1	8,420	14.0	6,240	11.1	3,630	8.1	5,440	11.9
3	1,760	10.2	1,530	3.7	3,030	6.2	5,680	9.0	5,670	9.4	6,560	11.7	1,840	4.1	2,250	4.9
4	10	0.1	50	0.1	2,530	5.2	2,190	3.4	2,090	3.5	3,370	6.0	1,550	3.5	2,150	4.7
5	830	4.8	3,640	8.9	5,290	10.8	7,790	12.3	7,490	12.4	8,480	15.1	3,390	7.6	5,260	11.5
6	1,170	6.8	5,880	14.4	4,940	10.1	6,970	11.0	6,750	11.2	6,320	11.2	5,530	12.4	5,050	11.1
7	50	0.3	580	1.4	500	1.0	1,910	3.0	1,790	3.0	1,410	2.5	990	2.2	980	2.1
Total by Subarea	17,210	100.0	40,940	100.0	48,870	100.0	63,330	100.0	60,270	100.0	56,140	100.0	44,510	100.0	45,660	100.0
Unallocated	580		730		720		1,370		1,270		1,090		600		630	
TOTAL	17,790		41,670		49,590		64,700		61,540		57,230		45,110		46,290	

NOTE: Includes permanent employment only, of which building maintenance/security is not allocated by subarea. See Table H.11 for construction employment, also not allocated.

SOURCE: Recht Hausrath & Associates

TABLE H.11: C-3 DISTRICT CONSTRUCTION EMPLOYMENT FORECAST, ANNUAL AVERAGE 1981-2000, BY COMPONENT

			1990-2000					
				Alternatives				
Components	1981-1984	1984-1990	Downtown Plan	1	2	3	4	5
New Construction	2,140	1,980	820	1,550	1,500	1,230	810	740
Conversion	40	30	30	40	40	40	small	30
Upgrading	2,210	2,460	2,740	2,870	2,840	2,810	2,730	2,730
Project Management	880	890	710	890	880	820	710	700
TOTAL	5,270	5,360	4,300	5,350	5,260	4,900	4,250	4,200

NOTE: The employment estimates in this table represent person-years of construction labor supported by the various component activities, not numbers of workers. Consequently, these estimates are not directly comparable to the other employment estimates presented in this analysis.

SOURCE: Recht Hausrath & Associates

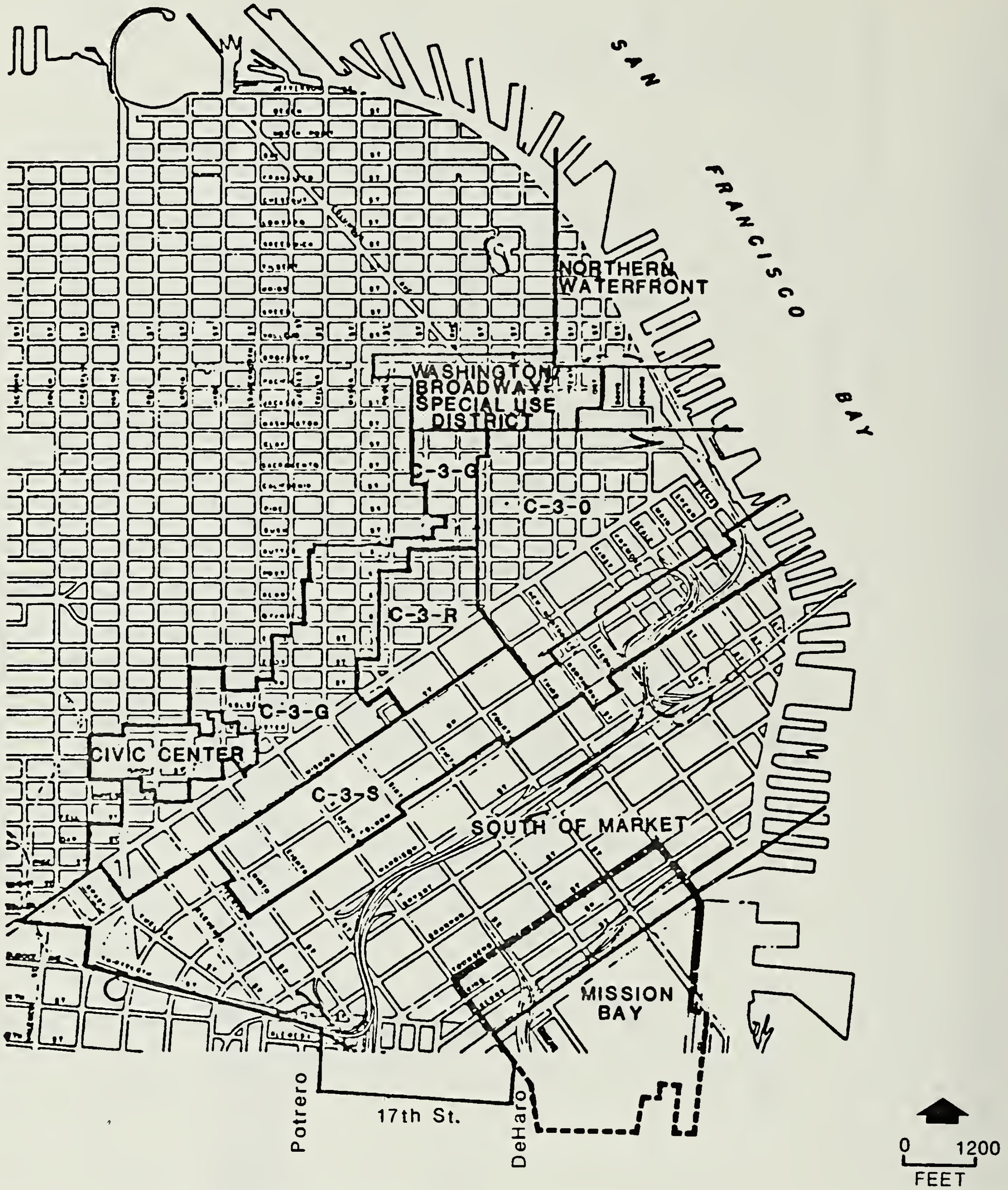


FIGURE H.2:
DOWNTOWN STUDY AREA USED IN DEPARTMENT OF CITY PLANNING FORECASTS

SOURCE: Recht Hausrath & Associates

APPENDIX I: THEORETICAL DISCUSSION OF HOUSING MARKET EFFECTS/ METHODOLOGY FOR FORECASTING RESIDENCE PATTERNS

INTRODUCTION

Appendix I describes the theoretical basis for considering the implications of employment growth on the housing market in San Francisco and describes the assumptions and analysis behind the forecasts of future residence patterns of C-3 District workers. The appendix is divided into three sections. Each section is presented as background for the housing analyses done for this study. The sections include the following, in the order presented:

- A summary description of the relationship between employment growth and housing markets. This section provides a description of the basic economic theory relevant to this subject, and as such provides the basis for much of the analysis done to consider the housing market impacts of C-3 District job growth.
- An overview of the methodology for forecasting future residence patterns of C-3 District workers. This section supplements the discussion in the impact section (Section IV.D) and also presents the results of sensitivity analysis done to test the implications for residence patterns of different assumptions and forecasts about other factors besides C-3 District employment growth.
- Supplemental tables to provide more detailed tabulations of the forecasts of future residence patterns, particularly concerning changing residence patterns for workers in different business activities.

RELATIONSHIP BETWEEN EMPLOYMENT GROWTH AND HOUSING MARKETS

Stated very simply, and generally, there is a relationship between employment growth and housing markets. The basis for this relationship lies in economic and housing market theory. Similarly, there is a relationship between employment growth in San Francisco and the City's housing market. The theoretical basis for the generalized relationship applies in this specific case as well.

Much of the debate about the relationship between employment growth and housing markets does not concern whether such a relationship exists. Rather, the points of debate often focus on the nature of a particular situation in a specific market context and geographic area. The problem is not with the theory but with our ability to document a particular situation. Except in theory, it is difficult to isolate and measure the effect of only one of the many factors (employment) affecting housing markets. Further, it is difficult in practice to focus on the role of C-3 District employment growth (as a subgroup of all city or all regional employment growth) in affecting San Francisco's housing market (as a subgroup of all housing within the region).

The Generalized Relationship

The relationship between employment growth and housing markets can be described most clearly by discussing the generalized situation. Essentially, this provides a summary of the basic theory relevant to this subject. (This may be understood more easily if one thinks in terms of a large regional area and not a city within a region as is the case for San Francisco.)

Generally the relationship is as follows:

- Employment growth means growth of employed labor.

  The number of workers newly employed equals the number of additional jobs (except in cases of part-time positions or workers holding two jobs). The individuals newly employed do not necessarily work at the new jobs (there is constant turnover whereby existing workers change jobs).

- Growth of employed labor means population growth to provide that labor.

  The amount of population growth could be less than needed to accommodate the growth of employment to the extent that there is increased labor force participation or a reduction in unemployment./1/

- Population growth means growth of households which means increased demand for housing.

The amount of housing demanded depends on how the increment of population groups into households (affected by workers per household and persons per household). The type, price/rent, and location of housing demanded depends on the demographic and income characteristics of the new households (not just the new workers), as well as on other factors affecting financial resources available for housing and housing preferences.

- Households seeking housing initially add to the demand for the existing stock of housing. This can mean that new units are then supplied of the types and prices/rents demanded by the new households. The supply will be expanded if the prices/rents of units demanded cover the costs of supplying these new units and provide a competitive return to the housing developer/investor. If the supply expands to accommodate increased demand, market prices/rents for units of various types will not necessarily be affected by employment growth. Employment growth would mean more residents and more housing, however.

- If housing is not built to directly accommodate increased demand, (the more likely situation), then a series of market interactions occurs. Initially, there is increased competition for the existing housing of the types that meet the demand of the additional worker households. Increased competition would mean increased prices/rents for existing housing. The amount of increase depends on the magnitude of the imbalance between demand and supply and on the extent to which there are consumers willing and able to pay higher prices.

  Those who do pay higher prices secure their preferred units, and those who do not must look for other housing. This can result in a series of interactions whereby households who are unwilling or unable pay for the housing in greater demand look to their next most acceptable housing choices. This increases competition for that housing and could result in increased prices/rents there. This "chain reaction" continues to occur as consumers make housing choices depending on what they are willing and able to pay for products of various types.

  Somewhere along this series of market interactions, it is or becomes (as prices/rents increase) feasible to expand the supply of housing. Ultimately, the supply is expanded to accommodate the increased number of households. It can be expanded by building new housing, dividing existing housing into more units, or by upgrading or converting units that were not being used for housing. It is also possible that the occupancy of existing housing could increase (in which case the number of additional units is less than the number of additional households). It is also possible that there is feedback to employment growth whereby the lack of appropriate housing could make it difficult to attract labor.

The result of these market interactions could be an increased number of households, an increased supply of housing, and higher prices/rents for housing. It could be higher average overall prices/rents, if prices had to increase in order to make it feasible to expand the supply. The increase in prices/rents could have occurred fairly extensively throughout the housing market, affecting units of many different types and in varied price ranges. The increases could also affect some types and prices of housing more than others. Generally, the effects of increased demand continue to "filter down" until the market is able to make the adjustments needed to expand the supply. Often, those who are affected most by increased housing costs or who must make the most sacrifices are those with fewer resources and less ability to compete for housing.

- The description above points out that the addition of housing supply releases the market pressure contributed by increased demand. At what point along the filtering process the supply is expanded makes a difference in terms of the effects on different segments of the market (i.e. prices/rents could still be higher for some types of housing or consumers although the increase in supply moderates the effects on other types of housing and other consumers).

Complicating Factors

The previous discussion describes the basic process whereby housing markets adjust to increases in housing demand. Increases in employment mean increased housing demand which means that adjustments in supply must eventually occur. However, this basic relationship is complicated by several factors:

- At any one time, other factors besides employment are contributing to changes in the demand of housing. These other factors could result in increases in the amount of housing demanded and/or in changes in the demand for housing of various types and prices and at various locations. Because of these other factors, it is difficult to isolate the sole effects of employment growth. Further, the effects of employment growth can differ depending on other demand factors. These other factors can include a variety of demographic, lifestyle, job-related, and investment reasons.

- Separate from the factors affecting housing demand, there are other factors affecting the market's ability to supply housing in response to changing demand. These factors are separate from employment growth yet they are important in determining the housing market impacts of employment growth. Examples of these factors are the land use policies which determine what can be built in certain areas, the financial factors which determine the cost and availability of money for housing construction and for housing purchases, and the commitment of national priorities to housing. As we have seen, these types of factors have had a major effect on the housing market of the past few years.

- Within a large housing market, there are many housing submarkets. A submarket includes both the consumers with relatively similar housing preferences and the supply of housing which meets those preferences. The series of market interactions which can occur as the market adapts to increased demand (described above) is traced as it affects different submarkets. Because of the large number of housing submarkets, the market interactions which are constantly occurring are complex and sometimes difficult to trace in practice, although they can be described theoretically. For example, the housing products which may be acceptable to consumers in a particular submarket (defined by housing type, price/ rent, and type of location) may not be located in the same geographic area (for example, the substitutes for housing in some San Francisco neighborhoods may be housing in Marin or in the east bay).

The Relationship From The Perspective Of San Francisco's C-3 District

When the question of the relationship between employment growth and housing markets is raised within the context of San Francisco's C-3 District there are still further complexities. The additional complexities arise because San Francisco is only one part of the larger Bay region. Three factors are particularly important.

- C-3 District employment growth or C-3 District office employment growth represent defined subgroups of the increased housing demand resulting from employment growth. The housing market impacts of C-3 District employment growth are dependent on changes in other housing demand factors and are affected by the increases in demand from other employment growth, namely in the rest of the City and the rest of the region.

- By limiting the discussion to the impacts on San Francisco's housing market, the analysis must consider housing in the City separately from housing elsewhere in the region. This adds complexities since the increased demand for housing because of downtown employment growth includes demand for areas outside of San Francisco as well. Further, housing supply in San Francisco overlaps with housing elsewhere in the region in serving consumers in various housing submarkets. To focus only on City housing requires division of these submarkets.

- Concentrating on the effects of a subgroup of regional employment growth (C-3 District) and a segment of the region's housing market (San Francisco housing) requires that consideration be given to both the effects of a net increase in the number of jobs on the amount of housing required in the region, and the effects of the location of job growth on the distribution of the region's households among housing locations throughout the region. In other words, it is not just a question of adding households, but one of where the housing is added and of how existing workers and households "reshuffle" themselves throughout the region. All of the changes which could occur throughout the region are very difficult to trace.

  For example, those newly employed in the region because of C-3 District job growth would not necessarily be employed in the new jobs in the C-3 District, or even in San Francisco, since there is constant turnover as existing workers change jobs. Similarly, those newly employed in the C-3 District would not necessarily be in the households that are new to the region or even new to San Francisco. Further, if those who change jobs change their place of residence as well, they may not make both moves at the same time. Even if these two decisions are related, they could occur at very different times, often because the housing decision is influenced by many other factors besides place of employment. The situation is further complicated by multiple-worker households in which the workers do not work in the same city. Even if place of work plays an important role in choosing housing, the housing may not be in the same city as either job but someplace in-between.

Describing And Forecasting This Relationship

As described in the summary statement at the beginning of this section, it is easier to describe the theoretical relationship between employment growth and housing than it is to develop data and information to describe a particular situation. This subsection highlights the types of descriptions that are possible.

Basically, the relationship between employment growth in the C-3 District and San Francisco's housing market can be described in the following ways:

- A theoretical description of the relationship can be written.
- Data can be used to quantitatively describe:
    - the residence patterns of C-3 District workers among counties within the region;
    - the demographic, household, and housing characteristics of C-3 District workers by the county in which they live;
    - the distribution of employed San Francisco residents among places of work, and the number and type of City residents working in the C-3 District;
    - the number and type of jobs in the C-3 District;
    - the overall distribution of population, labor force, housing, and employment throughout the region;
    - changes in the characteristics of the City's housing market over time (number and type of units, prices/rents);
    - changes over time in the demographic and household characteristics of the City's population, including changes in the place of work of residents;
    - changes over time in the number and type of jobs in the C-3 District and in the rest of the City; and
    - changes over time in the overall distribution of population, labor force, housing, and employment throughout the region.

    In each case, the changes that can be observed as having occurred over time are net changes resulting from the influence of many factors. The situation is very dynamic and very complex. People are constantly changing jobs, changing housing, and moving in and out of the region for a variety of reasons. The influence of any one factor, such as employment growth, can be considered only qualitatively and involves some judgement.
- Forecasts can be prepared of future residence patterns and consideration can be given to the effects on the housing market of future employment growth. These would be based on analysis of the theory and of the types of data listed above. The forecasts could quantify the number of C-3 District workers likely to reside in San Francisco in the future

> given assumptions and forecasts about how other factors besides C-3 District employment growth are likely to change over time. Alternatives for C-3 District job growth could be tested to evaluate the effects on residence patterns of more or less future downtown employment. Consideration could then be given, qualitatively, to how the availability of housing in San Francisco and how prices and rents of City housing could be affected by future job growth. The result would not be a simple statement of "cause and effect", but rather a reasoned set of conclusions of how future job growth, within the context of many other local, regional, and national factors, could affect San Francisco's housing market.

The items listed above were completed as parts of the housing analysis done for this study. They are described in different sections of this EIR. A summary of the theoretical description of the relationship between employment growth and housing markets was presented in this section of Appendix I. Data and information developed to describe relevant current conditions are presented in the housing and employment setting sections (Sections IV.D and IV.C). Much of the analysis done to identify the changes which have occurred and the recent trends which will influence future conditions is summarized in the first part of the housing impact section (Section IV.D). The forecasts of future residence patterns and the implications for housing and population in San Francisco are also presented in the housing impact section (Section IV.D). Further description of the methodology for forecasting future residence patterns and results of sensitivity analysis to test the implications of alternate assumptions and forecasts are presented in the next part of Appendix I. More detailed tables summarizing the forecasts are presented at the end of this appendix.

METHODOLOGY FOR FORECASTING RESIDENCE PATTERNS

Approach

The forecasts of future residence patterns of C-3 District workers were prepared by considering changes in the number and type of C-3 District jobs within the context of forecasts and assumptions about how other factors besides C-3 District employment are likely to change over time. The diagram in Figure I.1 summarizes the types of factors considered.

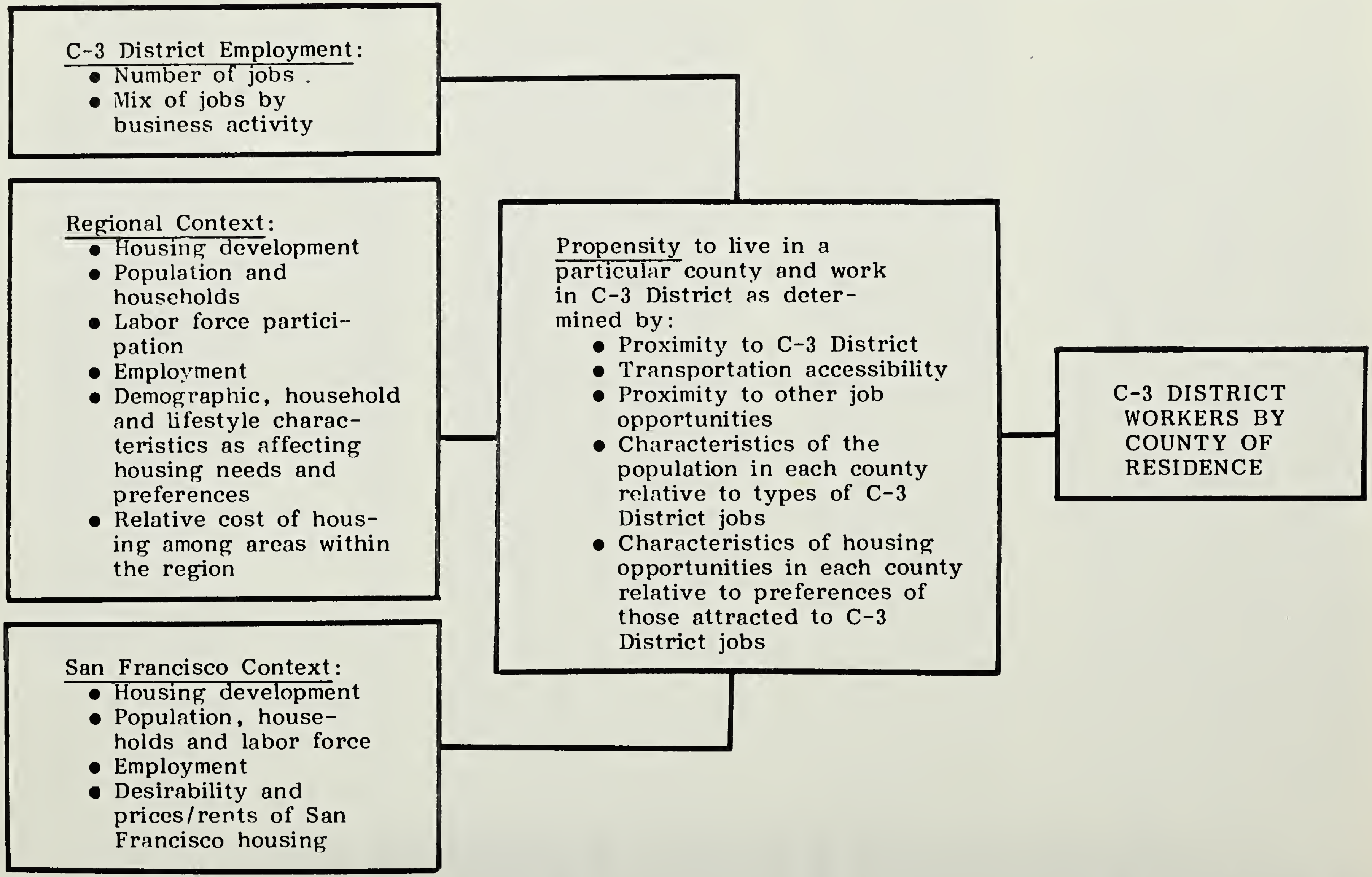
Among the four types of factors identified in Figure I.1, the number of jobs of various types in the C-3 District is important since different jobs employ workers with different demographic and household characteristics and different housing preferences. The regional context is important from the perspective of how the region's labor force is likely to increase over time and to be distributed among counties throughout the region. It is also important in terms of employment growth elsewhere in the region. C-3 District employers will compete with businesses in other locations in attracting labor from throughout the region.

The future context for San Francisco is a specialized case within the regional context. Special attention is focussed on San Francisco because of its importance in supplying labor for C-3 District jobs, because the Downtown Plan and Alternatives affect housing supply in San Francisco, and because the analysis of impacts on housing and population in San Francisco is of particular interest in this EIR.

The fourth major factor considered is the "propensity" to live in a particular county and work in the C-3 District. It defines the extent to which those employed in the C-3 District are drawn from the labor supply in each county. In other words, the San Francisco and regional contexts identify the future supply and distribution of labor and jobs. The propensity factor identifies the likelihood that the C-3 District will compete successfully for that labor. It identifies the share or percentage of labor in various locations which could be reasonably expected to work in the C-3 District.

Analysis of all of these factors produced a forecast of future residence patterns of C-3 District workers. It is important to understand that the forecasts describe the residence patterns that are likely to occur in the future given C-3 District job growth and changes in all of the various factors considered. As such the forecasts are likely future outcomes considering both demand and supply factors. They do not necessarily identify the C-3 District workers who might want to live in each county or who might prefer housing of various types or at various locations. Instead, the forecasting process considers how all of the relevant demand and supply factors throughout the region are likely to combine in producing a particular future result./2/

FIGURE I.1: DIAGRAM OF FACTORS CONSIDERED IN FORECASTING FUTURE RESIDENCE PATTERNS OF C-3 DISTRICT WORKERS


C-3 District Employment:
• Number of jobs
• Mix of jobs by business activity
Regional Context:
• Housing development
• Population and households
• Labor force participation
• Employment
• Demographic, household and lifestyle characteristics as affecting housing needs and preferences
• Relative cost of housing among areas within the region
San Francisco Context:
• Housing development
• Population, households and labor force
• Employment
• Desirability and prices/rents of San Francisco housing
Propensity to live in a particular county and work in C-3 District as determined by:
• Proximity to C-3 District
• Transportation accessibility
• Proximity to other job opportunities
• Characteristics of the population in each county relative to types of C-3 District jobs
• Characteristics of housing opportunities in each county relative to preferences of those attracted to C-3 District jobs
C-3 DISTRICT WORKERS BY COUNTY OF RESIDENCE

SOURCE: Recht Hausrath & Associates

Procedures for Estimating Future Conditions

C-3 District Employment

The C-3 District employment forecasts are described in detail in Section IV.C, Business and Employment Impact, and in Appendix H. The forecasts of residence patterns were done on the basis of employment by business activities and then aggregated to produce the forecasts of employees by county that are displayed in the text.

Regional Context

A number of sources provided information on the regional context. Census data, building permit data, employment statistics, and other housing market information were gathered and combined to summarize changes which have occurred over the past 10 and 20 years in the amount and distribution of housing, population, and labor force throughout the region. Future forecasts of these factors were collected and reviewed within the context of recent trends. Much of the forecast information is from the regional forecasts of the Association of Bay Area Governments (ABAG).

Of particular importance is the future distribution of housing throughout the region. Table I.1 summarizes the past and projected future amount and distribution of housing. The percentages indicate the share of the region's total housing and of housing growth located in each county./3/

Analyses of population and labor force trends were combined with the housing forecasts to estimate the future distribution of labor throughout the region. These estimates are summarized in Table I.2. The percentage distributions of employed persons by place of residence indicate how the region's workforce is likely to be distributed throughout the Bay Area counties by the year 2000.

The estimates illustrate the increasing relative importance of the east bay and the north bay in housing the workforce of the region. They also show the large amount of growth expected throughout the region and particularly in the east bay and the south bay./4/ The regional totals reflect an increase

TABLE I.1: SUMMARY OF CHANGES IN THE AMOUNT AND DISTRIBUTION OF HOUSING THROUGHOUT THE REGION, 1970, 1980, and 2000

	Total Housing Units			Housing Growth			Total Units 1980	Housing Growth 1980-2000
	Percent of Region			Percent of Region				
Counties	1970	1980	2000	1970-80	1976-1981	1980-2000		
	%	%	%	%	%	%		
San Francisco	19.1	15.4	12.9	1.4	4.7	4.6	316,608	30,000
Alameda	23.3	21.6	21.0	15.1	15.0	19.1	444,607	125,950
Contra Costa	10.9	12.2	13.4	17.0	19.5	17.7	251,951	116,506
Solano	3.3	4.1	5.9	7.0	10.0	11.0	84,270	72,160
Napa	1.7	1.9	2.0	3.0	2.0	2.2	40,052	14,420
San Mateo	11.8	11.3	10.5	9.7	7.6	7.1	233,200	46,866
Santa Clara	20.7	23.0	23.3	31.4	27.8	24.6	473,817	161,741
Marin	4.4	4.5	4.3	4.8	3.5	3.5	92,649	23,140
Sonoma	4.8	6.0	6.7	10.6	9.9	10.2	124,189	67,353
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	2,061,343	658,136
San Francisco	19.1	15.4	12.9	1.4	4.7	4.6	316,608	30,000
East Bay (a)	39.2	39.8	42.3	42.1	46.5	50.0	820,880	329,036
South Bay (b)	32.5	34.3	33.8	41.1	35.4	31.7	707,017	208,607
North Bay (c)	9.2	10.5	11.0	15.4	13.4	13.7	216,838	90,493
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	2,061,343	658,136

NOTE: The 1970 and 1980 figures are from Census data. The housing growth figures for 1976-1981 represent building permits issued during that period. The 2000 forecasts are prepared by ABAG and reported in its Projections 1979 report. See note 3.

(a) Includes Alameda, Contra Costa, Solano, and Napa counties.
(b) Includes San Mateo and Santa Clara counties.
(c) Includes Marin and Sonoma counties.

SOURCE: Recht Hausrath & Associates

in workers of about 43 percent over the next 20 years for a compound rate of growth of 1.8 percent per year. This reflects a slower rate of growth than the 3.3 percent per year experienced during the 1970's when the region's labor force increased by 38 percent in just 10 years.

These distributions are approximate, order-of-magnitude estimates developed for purposes of illustrating the likely future distribution of employed labor among the counties of the region. They are not based on detailed analysis of each county or of all the factors involved. The forecasts for San Francisco were developed in more detail as a part of the future context for San Francisco that is described in the next subsection of this appendix.

The estimates in Table I.2 of future employed residents in 1990 and 2000 for all counties except San Francisco were derived by assuming the ABAG housing forecasts shown in Table I.1 and by assuming changes in the 1980 ratios of employed persons per housing unit as derived for each county from 1980 Census data. To primarily reflect a somewhat slower increase in labor force participation in the future, the growth of employed persons per housing unit from 1980 to 1990 and 1990 to 2000 is expected to be lower than the growth reflected by the changes in these ratios during the 1970's. From 1980 to 1990, the ratios for each county were assumed to increase by 80 percent of the increase experienced from 1970 to 1980. From 1990 to 2000, a range was developed by assuming either no further change in the ratios after 1990 or a further increase by 75 percent of the increase from 1980 to 1990. The 1990 to 2000 figures shown in the table are judgemental estimates, often taken as the midpoint of that range. The future ratios of employed persons per housing unit were applied to the total number of housing units in the future (not just those newly developed), so the estimates of future employed persons reflect both the growth of housing and population and the changing characteristics of the total population.

The changes over time in the ratios of employed persons per housing unit reflect changes in the overall labor force participation of residents of each county. The latter combines changes in the mix of population in their working years with changes in the labor force participation of persons in those age groups. The estimates developed and shown here are of employed persons,

TABLE I.2: SUMMARY OF CHANGES IN THE NUMBER AND DISTRIBUTION OF EMPLOYED RESIDENTS THROUGHOUT THE REGION, 1970, 1980, and 2000

	Employed Persons by Place of Residence			Employed Persons by Place of Residence			Growth of Employed Residents	
	(000)			Percent of Region			Percent of Region	
Counties	1970	1980	2000	1970	1980	2000	1970-1980	1980-2000
				%	%	%	%	%
San Francisco	318	342	398	17.4	13.6	11.1	3.5	5.2
Alameda	417	515	700	22.9	20.5	19.5	14.1	17.3
Contra Costa	211	305	460	11.6	12.1	12.8	13.6	14.4
Solano	50	90	195	2.7	3.6	5.4	5.8	9.8
Napa	29	43	60	1.6	1.7	1.7	2.0	1.6
San Mateo	241	314	405	13.2	12.5	22.3	10.5	8.5
Santa Clara	409	661	950	22.4	26.2	26.5	36.4	27.0
Marin	81	117	170	4.5	4.6	4.7	5.2	5.0
Sonoma	68	130	250	3.7	5.2	7.0	8.9	11.2
Total	1,824	2,517	3,588	100.0%	100.0%	100.0%	100.0%	100.0%
San Francisco	318	342	398	17.4	13.6	11.1	3.5	5.2
East Bay (a)	707	953	1,415	39.8	37.9	39.4	35.5	43.1
South Bay (b)	650	975	1,355	35.6	38.7	37.8	46.9	35.5
North Bay (c)	149	247	420	8.2	9.8	11.7	14.1	16.2
Total	1,824	2,517	3,588	100.0%	100.0%	100.0%	100.0%	100.0%

NOTE: The 1970 and 1980 figures are from Census data. The 2000 estimates were prepared by Recht Hausrath & Associates as described in the text of this appendix. These estimates are only approximate, order-of-magnitude figures. See note 6.

(a) Includes Alameda, Contra Costa, Solano, and Napa counties.
(b) Includes San Mateo and Santa Clara counties.
(c) Includes Marin and Sonoma counties.

SOURCE: Recht Hausrath & Associates

not the labor force. The labor force is larger than the number of employed persons to the extent that there are unemployed individuals. It should also be noted that by developing overall ratios of employed persons per housing unit, an average housing vacancy factor is incorporated./5/

The estimates of future employed residents developed as described above were compared with recent forecasts of employed residents prepared by ABAG. The number of employed persons in 2000 estimated for this EIR is nearly the same as the ABAG forecast (within two percent). The distributions of employed persons throughout the region are also very similar./6/

Separate from housing and employed residents, the ABAG employment forecasts were reviewed in the light of recent county employment data (from the State of California Employment Development Department and the Department of Commerce, County Business Patterns) to describe recent trends and the likely future distribution of employment throughout the region.

San Francisco Context

Housing and population trends were analyzed for San Francisco. A summary of the changes which have occurred over the past 20 years is presented in the text in the housing impact section (see Tables IV.D.13 and IV.D.14). Future scenarios of housing development, population changes, and changes in employed residents were developed as input into the forecasts of residence patterns. The scenarios of future employed residents of San Francisco are the primary inputs into the forecasting process.

The number of employed residents in the City in the future depends on the addition of population and households, and on the extent to which the existing and future population includes employed persons. Both of these factors are expected to experience some change over time.

The number of households in the City will depend largely on the addition of housing units. The number of households equals the number of occupied housing units, so the terms are used interchangeably. Several different scenarios for housing development in San Francisco are possible. Many regional and national factors beyond local control will affect the outcome. Recognizing the uncertainties involved, a "most likely" scenario and possible alternative scenarios were developed for the purposes of this study. Generally, it is expected that the average net addition of housing units in San Francisco could range from 600 to 1,500 units per year. The following information is relevant to these estimates:

- From 1970-1980: about 1,600 new units were built per year; the net addition of housing units after accounting for demolitions and conversions was 620 units per year; and the net addition of households was 370 per year after accounting for vacancies and for units not available for year-round use.
- From 1980-2000: ABAG forecasts the addition of 1,500 units per year in its Projections 1979 report and assumes 600 units per year in its "Strategic Plan" report. Although ABAG does not forecast housing units in its Projections 1983 report, the addition of 1,472 households per year is projected. The goal stated in the City's Housing Element of the Comprehensive Plan is for the addition of 2,000 units per year in the 1980-1985 period.

A specific assumption about the City's Office-Housing Production Program (OHPP) was not made. If this or a similar program were assumed for future years, it would support a forecast of additional housing that is closer to the higher end of the range of 600 to 1,500 units per year. In other words, this range of potential future housing includes the implementation of the OHPP in future years.

For purposes of estimating future employed residents, assumptions were made about the net addition of households in San Francisco in the future. It was assumed that most of the growth of households would come from the development of new housing units. It could also occur because of changes in the vacancy rate of existing units, because existing larger houses are divided into several smaller housing units, as well as through the creation of in-law units as a part of existing housing. It was assumed that the combined result of all these types of changes could produce from 600 to 1,500 additional households each year in San Francisco, over the 20 years from 1980 to 2000.

Table I.3 identifies the number of households in San Francisco in future years based on these assumptions. As shown, the increase in the number of households would range from 12,000 to 30,000 households over the 20-year period. This would be a relatively small increase of from four to ten percent over 20 years. Although these scenarios are higher than the net increase in households experienced during the 1970's, it was reasoned that the current and future housing market will support the addition of from 600 to 1,500 housing units per year, while public policy in combination with housing market pressures will limit the demolition and conversion of existing units to support a higher net addition of units.

It is also expected that the average number of employed persons per household will increase over the next 20 years. In 1980, Census data indicate an average of 1.145 employed persons per household in San Francisco. This represents an increase of six percent from the average of 1.08 employed persons per household in 1970. As explained in the text, the number of employed persons per household has been increasing, while the total persons per household has declined, primarily because of fewer children per household.

Because most of the baby boom generation has already entered the labor force and because of the increasing numbers of people over 65 years of age, generally less increase in labor force participation is expected in the future. For some groups, however, labor force participation will continue to increase, as existing residents of the City who did not previously work become employed and as people move in and out of the City and the new residents include more employed persons than did the residents they replaced. It is expected that the labor force participation of women in San Francisco will continue to increase and that the strong attraction of the City as a place to live for adult working-age households will continue.

The critical ratio used in these forecasts is employed persons per household. This ratio could also be affected by pressures to increase household size and increase the number of workers per household to enhance the ability of households to pay for housing. The relatively high costs of housing are likely to encourage larger household sizes in the future. The development of new

TABLE I.3: SCENARIOS FOR GROWTH OF HOUSEHOLDS AND EMPLOYED RESIDENTS IN SAN FRANCISCO

	1981	1984	1990	2000	Growth 1980-2000
Households (or occupied housing units)					
1980 = 298,956					
Future, if assume:					
Case A: 600 added per year	299,556	301,356	304,956	310,956	12,000
Case B: 1,000 added per year	299,956	302,956	308,956	318,956	20,000
Case C: 1,500 added per year	300,456	304,956	313,956	328,956	30,000
Employed Residents					
1980 = 342,458 (1.145 employed persons per household)					
Future, if assume: 1.145 employed persons per household increases to 1.202 by 1990 and to 1.247 by 2000					
Case A	344,897	350,803	366,557	387,762	45,278
Case B	345,358	352,666	371,365	397,738	55,254
Case C	345,933	354,994	377,375	410,208	67,724

NOTE: The 1980 data are from the U.S. Census. The scenarios for 1981 and future years were developed by Recht Hausrath & Associates as described in the text of this appendix. The scenarios are approximate estimates. The figures are not rounded so the reader can duplicate the calculations described in the text as an aid to understanding the basis for the estimates.

SOURCE: Recht Hausrath & Associates

housing could also affect this trend depending on the size and types of units produced. For example, the more very small units produced, such as studios or in-law units, a greater number of smaller households with fewer than average workers per household would be expected.

A "most likely" scenario was developed after consideration of all these factors. It assumes that the 1980 ratio of 1.145 employed persons per household increases by five percent to 1.202 by 1990 (about 80 percent of increase experienced 1970-1980) and by an additional 3.75 percent to 1.247 workers per household in 2000 (about 75 percent of increase 1980-1990). If these ratios are applied to the number of future households in San Francisco, the estimates of future employed residents are those shown in Table I.3. These scenarios reflect an increase in employed residents over the next 20 years of from 45,000 to 68,000 persons, increases of 13 to 20 percent, respectively./7/

Other estimates of future employed residents of San Francisco were derived by assuming alternate scenarios for the increase in the average number of employed persons per household. These ranged from a high scenario assuming six percent increase in the ratio over each of the next ten-year periods and a low scenario assuming two percent growth in each period. For sensitivity analysis, these estimates would reflect a range around each of the estimates shown in Table I.3. For example, for Case B the increase in employed persons of 55,250 would range from 37,400 to 68,000 if these alternate assumptions were used.

One additional aspect of the future context for employed residents in San Francisco was evaluated: the effects of the C-3 District Alternatives on the number of employed residents in San Francisco. As explained in the impact section, C-3 District housing policy could result in the addition of housing units in San Francisco that would not have been built otherwise. If so, there would be a larger number of households in San Francisco as well and a larger number of employed residents. To develop estimates of employed residents for the Downtown Plan and for each Alternative, the scenarios described above were modified to account for the addition of different numbers of households. Table I.4 shows how the addition of various numbers of households would

TABLE I.4: SCENARIOS ILLUSTRATING EFFECT OF C-3 DISTRICT HOUSING POLICY ON EMPLOYED RESIDENTS IN SAN FRANCISCO

Assumption: Without Change in C-3 District Housing Policy, Use Scenario Assuming 1000 Households Added per year. This is Case B in Table I.3.

	Households		Employed Residents	
	2000	Change 1990-2000	2000	Change 1990-2000
Case B	318,956	10,000	397,738	26,373
Additional Households 1990-2000 Because of C-3 District Housing Policy Changes				
+ 200	319,156	10,200	397,988	26,623
+ 500	319,456	10,500	398,362	26,997
+1,000	319,956	11,000	389,985	27,620
+1,500	320,456	11,500	399,609	28,244
+2,000	320,956	12,000	400,232	28,867
+3,000	321,956	13,000	401,479	30,114
+4,000	322,956	14,000	402,726	31,361

NOTE: The assumptions regarding future changes in employed persons per household are the same for all scenarios shown in this table.

SOURCE: Recht Hausrath & Associates

affect one of the scenarios of employed residents in San Francisco in 2000 (Case B from Table I.3). The differences are shown for the 1990 to 2000 period since this is the time when the C-3 District policies would have an effect.

For purposes of preparing the forecasts of future residence patterns, the Case B scenario of adding an average of 1,000 households per year (10,000 households from 1990-2000) was assumed under Alternative 1. Alternative 1 does not include the OHPP and does not propose any changes in C-3 District housing policy. Changes in C-3 District housing policy proposed in the Downtown Plan and in four of the Alternatives would affect the amount of housing built in the City. Thus, the Case B scenario was modified to reflect more housing development under the Downtown Plan and the other four Alternatives./8/ The assumptions for the increase in households from 1990 to 2000 for the Downtown Plan and the other Alternatives were the following: Downtown Plan, 10,200; Alternative 2, 11,000; Alternative 3, 10,500; Alternative 4, 14,000; and Alternative 5, 12,000./9/ The reasoning for these choices is explained in the text discussion of the potential net addition of housing under the Downtown Plan and in the Consultant's Report discussion of the potential net addition of housing under the policies of each of the Alternatives./10/

Propensities

The fourth major type of information developed for forecasting residence patterns was information on the propensity of residents in each county to work in the C-3 District. Since residents throughout the region are not equally likely to work in San Francisco, consideration had to be given to the relative attractiveness of housing locations for C-3 District workers and to potential future changes in the relative attractiveness of each place. Estimates were developed of the percentage of employed workers in each county who currently work in San Francisco and in the C-3 District. Table I.5 provides examples of how the "propensity to work in the C-3 District" currently varies for selected Bay Area counties. Other information about the commute patterns of workers in each county and about employment throughout the region was also developed.

TABLE I.5: EXAMPLES OF THE RELATIVE ATTRACTION OF C-3 DISTRICT JOBS TO RESIDENTS OF SELECTED BAY AREA COUNTIES

County	Total Number of Employed Persons, 1980	Percent of Total Employed Persons In The Region	Number Employed In C-3 District, 1981	Percent of C-3 District Jobs	Percent of Total Employed Residents In Each County
	(000)	%	(000)	%	%
San Francisco	342	14%	147	57%	45%
Alameda	515	20%	33	13%	6%
Contra Costa	305	12%	28	11%	9%
San Mateo	314	12%	29	11%	9%
Marin	117	5%	15	6%	13%

NOTE: Data on employed residents of each county is from the 1980 Census data file STF-3 as tabulated by the California State Census Data Center. The information on those employed in the C-3 District is that developed in this study (see Table IV.D.1). There is a slight inconsistency in the data in that the C-3 District data is for 1981 and the countywide data is for 1980. This does not have a major effect on the overall pattern illustrated by the figures. It probably means that the percentages in the far right hand column are slightly high.

SOURCE: Recht Hausrath & Associates

Table I.5 indicates that the propensity to work in the C-3 District is highest for San Francisco residents, followed by residents of Marin County, San Mateo and Contra Costa counties, and then Alameda County./11/ The propensity is indicated by the percentage of employed persons residing in each county who work in the C-3 District (far right column) and by comparison of that percentage to the other figures in the table./12/ For example, about 45 percent of employed San Francisco residents work in the C-3 District. This is the highest percentage among Bay Area counties. This percentage is much higher than the share of the region's total workforce represented by employed

City residents (14 percent). Thus, San Francisco residents represent a much higher share of all those who work in the C-3 District (they hold 57 percent of C-3 District jobs) than they do of the total regional workforce (14 percent). A similar situation exists for Marin County although to a lesser degree (13 percent of Marin's employed residents work in the C-3 District and they represent six percent of C-3 District workers, while all employed persons living in Marin represent five percent of the region's workforce).

Although Alameda County houses the second largest number of C-3 District workers, it has the lowest propensity to house C-3 District workers among the five counties shown in Table I.5 (six percent of the county's workers are employed in the C-3 District although, in total, the county houses 20 percent of the region's workforce). This probably reflects the large amount of employment within Alameda County itself as well as the fact that some portions of the county are quite distant from San Francisco.

Changes over time in these propensities had to be considered qualitatively based on a variety of information sources. Generally, the process was to develop a line of reasoning about how residence patterns have been changing (since trend data is limited) and to relate the changes to two types of factors. One is the extent to which the general distribution of housing and workers throughout the region has been changing. The other is the extent to which the commute patterns of residents in different areas have been changing. For example, during the 1970's population grew substantially in Contra Costa County, and the percentage of the region's population and housing located in the county increased. It also appears that the propensity of Contra Costa County residents to commute to jobs in San Francisco was also enhanced so that a larger percentage of the county's employed residents now work in San Francisco than was true ten years ago. There are many reasons for these changes related to all of the factors listed in Figure I.1.

A similar reasoning process was used to consider future changes in the propensities to work in the C-3 District. This was done qualitatively based on review of future employment, population, housing, and transportation factors, as well as past trends. The Downtown EIR Employee Survey was also useful since it included questions about the relative importance of various factors in the household's decision to choose a housing location or in a worker's decision to choose a job. Analysis of this data helped to identify the nature of the trade-offs which workers and households continually make as they are faced with changing employment and housing options.

Forecasts of Future Residence Patterns

Background Analyses

The forecasts of future residence patterns of C-3 District workers were developed based on consideration of all of the factors described above and identified in Figure I.1. In addition to the analyses done to identify trends and prepare future scenarios for the regional context, the San Francisco context, and propensities to live in each county and work in the C-3 District, other analyses were done to specifically investigate the residence patterns of C-3 District workers. Since consistent data for the C-3 District are not available for different time periods, changes in residence patterns cannot be easily identified and documented. Instead, various analyses were done to provide insights into probable trends. These analyses included:

- Documentation of changing residence patterns for San Francisco overall as shown by Census data for 1960, 1970, and 1980. This analysis is summarized in the text of the impact section (see Tables IV.D.13 and IV.D.14). Changes are considered from the perspectives of the places of work for City residents and of the places of residence for all people holding San Francisco jobs.

- Comparison of the residence patterns identified for downtown workers of various types in surveys that have been conducted for other studies and project EIRs. Although these surveys are not directly comparable, they provide some insights.

- Review of data supplied by a major C-3 District employer which described the places of residence of employees, currently, four years ago, and four years previous to that.

- Analysis of the Downtown EIR Employee Survey results to identify residence patterns for C-3 District workers according to when they became employed in the C-3 District, when they last changed their residence, and when they moved into the Bay Area. In the analysis of each of these groups, efforts were made to control for important demographic and housing characteristics to see if those who were newly employed or who moved recently appeared to have housing characteristics which differed from those whom they replaced or from all others in the downtown.

Process of Developing Forecasts

Having completed all of the background analyses and forecasts, future residence patterns were developed in several steps. The forecasts were prepared for workers in the various business activities and then combined to evaluate the reasonableness of the overall pattern.

First, decisions were made as to the number and percentage of C-3 District workers likely to reside in San Francisco and the number to reside outside of San Francisco. Second, those workers forecast to live elsewhere in the region were distributed to commute corridors (east bay, south bay, north bay) and then to counties. Third, the San Francisco residents were distributed among the four City Study Areas (southeast, southwest, northwest, northeast).

The most detailed analysis and the most accurate forecasts are those developed to identify the residence patterns of C-3 District workers according to whether they would reside in San Francisco or live elsewhere in the region. The next level of detail and accuracy applies to the distribution of workers living outside of the City among commute corridors. In order of reliability after that are the forecasts by county and then by San Francisco Study Areas.

The general approach in developing the forecasts for San Francisco, the commute corridors, and the Bay Area counties was to evaluate the number of workers forecast to reside in each place from two perspectives. The first was to consider the percentage distribution of C-3 District workers among places of residence in light of the analyses of how this distribution appears to be changing. The second perspective was to consider the percentage of employed residents of each county that would be represented by those working in the C-3 District. The analyses and forecasts of the future regional context, San Francisco context, and propensities to live in each county and work in the C-3 District provided the basis for this evaluation.

Scenarios For C-3 District Workers Living In San Francisco

In the process of forecasting residence patterns, several different scenarios were prepared for the C-3 District workers living in San Francisco. The results provide a sensitivity analysis of the implications of alternate assumptions and approaches. The scenarios are summarized in Table I.6.

The top two lines of the table identify the total number of employed residents of San Francisco and the number of C-3 District jobs. These items are common to all the scenarios. (For reference, the number of employed residents are those shown in Tables I.3 and I.4).

The next three lines present the "most likely" scenario. This is the one presented in the impact section of the text (see Table IV.D.15).

Three other scenarios were prepared. They are referred to as the low, mid, and high scenarios in the table. The assumptions behind each scenario are the following:

- High scenario: assumes that the 1981 percentages of C-3 District workers living in San Francisco remain constant in the future for each business activity. The overall percentage of C-3 District jobs held by City residents shown in Table I.6 declines over time by a small amount due only to differences in the mix of jobs, not because of any changes in the 1981 ratios.
- Mid scenario: assumes that the 1981 percentage of employed San Francisco residents represented by those working in the C-3 District (44.5 percent) remains constant in the future.
- Low scenario: assumes that the increase in C-3 District workers who live in San Francisco represents 30 percent of the growth over time in total employed residents in the City. This pattern may be similar to the trends from 1970 to 1980.

The second page of the table provides ratios of the increase in San Francisco residents working in the C-3 District to the increase in C-3 District jobs and to the increase in total employed City residents. Comparison of these ratios helps in evaluating the reasonableness of each scenario.

TABLE I.6: SCENARIOS FOR C-3 DISTRICT EMPLOYEES LIVING IN SAN FRANCISCO, FOR THE DOWNTOWN PLAN AND ALTERNATIVES

					2000					
						Alternative				
		1981	1984	1990	Downtown Plan	1	2	3	4	5
Employed Residents of San Francisco		345,360	352,670	371,370	397,990	397,740	398,990	398,360	402,730	400,230
C-3 District Jobs		270,370	286,130	327,900	376,420	392,580	389,330	384,660	371,890	373,020
					"Most Likely" Scenario					
C-3 District Workers Living in San Francisco		153,670	158,730	173,220	189,040	193,110	192,090	190,550	190,160	189,320
Percent of C-3 District Jobs		56.8%	55.5%	52.8%	50.2%	49.2%	49.3%	49.5%	51.1%	50.8%
Percent of Employed San Francisco Residents		44.5%	45.0%	46.6%	47.5%	48.6%	48.1%	47.8%	47.2%	47.3%
					Range of Estimates from Other Scenarios					
C-3 District Workers Living in San Francisco	Low -		155,870	161,480	169,470	169,390	169,760	169,580	170,890	170,140
	Mid -		156,940	165,260	177,110	176,990	177,550	177,270	179,210	178,100
	High -		161,870	184,110	208,980	217,870	215,960	213,340	206,710	207,340
Percent of C-3 District Jobs	Low -		54.5%	49.2%	45.0%	43.1%	43.6%	44.1%	46.0%	45.6%
	Mid -		54.8%	50.4%	47.0%	45.1%	45.6%	46.1%	48.2%	47.7%
	(A)High -		56.6%	56.1%	55.5%	55.5%	55.5%	55.5%	55.6%	55.6%
Percent of Employed San Francisco Residents	Low -		44.2%	43.5%	42.6%	42.6%	42.5%	42.6%	42.4%	42.5%
	(B) Mid -		44.5%	44.5%	44.5%	44.5%	44.5%	44.5%	44.5%	44.5%
	High -		45.9%	49.6%	52.5%	54.8%	54.1%	53.6%	51.3%	51.8%

TABLE I.6: SCENARIOS FOR C-3 DISTRICT EMPLOYEES LIVING IN SAN FRANCISCO, FOR THE DOWNTOWN PLAN AND ALTERNATIVES (Continued)

Comparisons For Evaluating Estimates		1981-1990	1990-2000					
			Downtown Plan	Alternative				
				1	2	3	4	5
		%	%	%	%	%	%	%
Net Increase in San Francisco Residents Working in C-3 District as Percent of Net Increase of C-3 District Jobs (a)	Most Likely	34.0	32.6	30.7	30.7	30.5	38.5	35.7
	Low	13.6	16.5	12.2	13.5	14.3	21.4	19.2
	Mid	20.1	24.4	18.1	20.0	21.2	31.7	28.5
	High	52.9	51.2	52.2	51.8	51.5	51.4	51.5
Net Increase in San Francisco Residents Working in C-3 District as Percent of Net Increase of Total Employed City Residents (b)	Most Likely	75.2	60.6	75.4	68.3	64.2	54.0	55.8
	(C) Low	30.0	30.0	30.0	30.0	30.0	30.0	30.0
	Mid	44.5	44.5	44.5	44.5	44.5	44.5	44.5
	High	117.1	93.4	128.0	115.3	108.2	72.1	80.4

NOTE: The assumptions used for the other scenarios (low, mid, and high) are described in the appendix text. The table entries labelled (A), (B) and (C) indicate where those assumptions enter into the calculation of the scenarios.

(a) For each time period and for the Downtown Plan and each Alternative, this percentage expresses the ratio: change in San Francisco residents working in the C-3 District/change in C-3 District employment.

(b) For each time period and for the Downtown Plan and each Alternative, this percentage expresses the ratio: change in San Francisco residents working in the C-3 District/change in employed City residents.

SOURCE: Recht Hausrath & Associates

The assumption to hold the percentage of jobs held by City residents constant results in the high scenario because C-3 District jobs are forecast to increase by a larger amount than employed San Francisco residents. Thus, the percentage of total employed residents who would work in the C-3 District would increase over time. The ratios on the second page of the table indicate that the increase in City residents working in the C-3 District would be larger than the net increase in total employed City residents in most cases. This is possible if there is a large amount of turnover of the housing stock and/or if many San Francisco residents change their place of work. This outcome is unlikely given the employment growth that is likely in places outside the C-3 District that would also compete for the City's labor force.

The low scenario reflects a decline in both the percentage of C-3 District jobs held by residents and the percentage of City residents who work in the C-3 District. While the average percentages appear reasonable, the marginal percentages on the second page of the table are less reasonable. They indicate that the increase in City residents working in the C-3 District would represent a relatively small share of the growth of C-3 District jobs (12.2 percent - 21.4 percent). While this is a possible scenario, it is on the low side because the growth of C-3 District employment of various types is likely to draw on more of the City's labor force.

The mid scenario is relatively similar to the low scenario. The main difference between the low and mid scenarios is that the mid scenario results in a larger share of future C-3 District jobs held by residents and a larger share of City residents employed in the C-3 District. It is the most similar to the "most likely" forecast.

The "most likely" scenario used for the forecast was developed by evaluating the scenarios shown here in light of all the analyses described earlier. The forecast numbers are estimates based on all of these considerations. Of particular importance was the analysis of residence patterns of current C-3 District workers according to when they had moved. The survey data showed that the percentage of C-3 District employees living in San Francisco declined the more recently the employees had moved, holding other variables, such as tenure and household income, constant. In other words, those who had moved most recently were less likely to choose housing in San Francisco than those whose most recent move occurred earlier. The survey results also identified somewhat different patterns for workers employed in different business activities which was also useful in completing the forecasts.

More detailed tabulations of the most likely forecast are provided in the Supplemental Tables and Maps presented as the last section of this appendix, including the forecasts by business activity.

NOTES - Appendix I

/1/ It is difficult to determine the effect of job availability on in-migration to the region. When questioned, recent in-migrants would probably list many factors besides employment as the reasons why they moved to the Bay Area. Thus, to some extent, growth of employment may be keeping up with population growth rather than attracting more labor. Yet, it may also be the case that in-migration drops off for a variety of reasons in times of economic problems (or out-migration increases), or in-migration may be much lower in places with depressed economies than in places with more job opportunities. The statements in this appendix recognize all the complexities and dynamics involved although they are somewhat simplified to explain the basic relationships.

/2/ The forecasts of residence patterns identify the number of C-3 District workers likely to reside in San Francisco and in other counties throughout the region in the future. As identified in Figure I.1, housing preferences in terms of who might want to live in each county were among the factors considered in developing the forecasts. However, the forecasts themselves do not necessarily identify the pool of those with preferences for housing in the various counties of the region. For example, the forecasts identify the number of C-3 District workers likely to reside in San Francisco in future years. The number of workers who might desire to reside in San Francisco exceeds the number who actually will live there. This is because households evaluate the types and prices/rents of available units (supply factors) within the context of their housing needs and preferences (demand factors) and make tradeoffs in deciding where to reside (the result of housing demand and supply factors). For San Francisco, the pool of potential residents is large and exceeds the number who will reside in the City. This appendix and the text in Section IV.D, Residence Patterns and Housing Impact make the distinction between forecast residence patterns and housing preferences to insure that the numbers are understood and used properly. Comments have been expressed which suggest that this distinction is not always understood. In other words, housing demand, per se, does not necessarily describe future residence patterns or housing impacts. However, housing demand factors must certainly be considered in forecasting residence patterns and housing impacts.

NOTES - Appendix I (Continued)

/3/ Since the preparation of this analysis, ABAG has released its Projections 1983 report. This report does not include forecasts of housing units. However, it does present forecasts of households. Comparisons of the household forecasts with the housing forecasts in Table I.1 indicates that the percentage distributions within the region are almost identical. For example, in 2000, the distribution of households in ABAG's Projections 1983 report is the following: San Francisco, 12.8 percent; east bay, 42.0 percent; south bay, 33.7 percent; and north bay, 11.5 percent. These are very similar to the percentages shown in Table I.1 for total housing units in 2000.

See Projections 83, Forecasts for the San Francisco Bay Area, 1985, 1990, 1995, and 2000, Association of Bay Area Governments, June 1983. (Hereinafter referred to as Projections 1983.)

/4/ The east bay and the south bay also experienced the most growth in employed residents during the 1970's. However, during that period, the south bay grew by a larger amount than the east bay. Compared to the 1970's, the estimates for the 1980's and 1990's indicate that the growth of employed residents in the south bay will represent a smaller share of the total growth for the region and that the growth in the east bay, north bay, and in San Francisco will represent a larger share.

/5/ The ratio of employed persons per housing unit, for each county, was developed by dividing the number of employed persons by the total number of housing units including vacant and occupied units. When calculated in this way, a housing vacancy factor is incorporated into the ratio. This is appropriate when this type of ratio is to be used to estimate the number of employed persons from estimates of future housing stock as was done in this study.

The ratios of employed persons per housing unit developed for each county from the 1980 Census data incorporate the overall housing vacancy factor existing in each county at that time. Since the changes over time in the ratios of employed persons per housing unit were estimated to reflect changes in the overall labor force participation of residents of each county, the ratios can be assumed to incorporate the overall 1980 vacancy factor for that county in future years.

/6/ The estimates of employed residents presented in Table I.2 were prepared by Recht Hausrath & Associates prior to the release of ABAG's forecasts of employed residents in its Projections 1983 report. It turns out that the figures in this EIR and those developed by ABAG are very similar. For example, in 2000, ABAG forecasts 3,530,000 employed residents of the region and the estimates in Table I.2 show 3,588,000 employed residents. The distribution among counties within the region is also very similar. For 2000 the ABAG figures indicate the following percentage distribution of employed persons by place of residence: San Francisco, 11.4 percent; east bay 39.9 percent; south bay, 37.6 percent; and north bay, 11.1 percent. This distribution is very similar to that shown in Table I.2.

NOTES - Appendix I (Continued)

/7/ It turns out that the estimated growth of employed residents in San Francisco of 55,254 under case B in Table I.3 is very similar to ABAG's most recent forecast for San Francisco of 55,408 additional employed residents from 1980 to 2000. (See Projections 1983, p. 101.)

/8/ Only Alternative 5 includes the OHPP. The Downtown Plan and Alternatives 2 and 3 include incentives for producing housing in the C-3 District. If the OHPP were assumed to apply under the Plan and these two Alternatives, the amount of housing built and the increase in households would be higher than forecast. Alternative 4 includes a different program than the OHPP for requiring housing assistance as a condition of office development. Thus, the OHPP would not apply under this Alternative.

/9/ The estimates of employed persons per household for the additional housing units built under the Downtown Plan and Alternatives 2, 3, 4, and 5 were developed using the same overall citywide ratios of employed persons per household that were used for Alternative 1 (ratios shown in Table I.3). It is possible that the additional housing units could have higher than average employed persons per household if they were located nearer the downtown or because they are more likely to be purchased by households with workers while the overall citywide average assumes some households without workers. An alternate estimate of employed residents in 2000 was prepared assuming that the additional housing units were occupied at 1.8 workers per household instead of at the overall average of 1.247 workers. The results indicate a slightly larger number of workers in 2000 under this alternate assumption. It would make the least difference for the Downtown Plan (adding only 110 workers) and the most difference for Alternative 4 (adding about 2,200 workers). This alternate scenario was not chosen as the most likely. The main reason was that the additional units may be smaller than average with lower average workers per household even if they were all occupied by workers. This is likely to be the situation for Alternative 4 which would add the largest number of units.

If the number of employed residents was underestimated, this factor would not significantly affect the estimated residence patterns. Either the number of C-3 District workers who live in San Francisco would be slightly underestimated, or the percentage that they represent of all employed San Francisco residents would be slightly overestimated. The latter is probably the more likely.

/10/ "Growth Management Alternatives for Downtown San Francisco: Downtown EIR Consultant's Report," prepared by Environmental Science Associates, Inc., May, 1983. See particularly Table V.D.3 and associated text.

/11/ The propensities for the other four counties are lower than those for the five counties discussed here. The propensities shown in Table I.5 should be viewed as order-of-magnitude estimates that are most useful in establishing the relative differences in propensities among counties.

NOTES - Appendix I (Continued)

/12/ Estimates were also developed of the propensities to live in each county and work in San Francisco, outside the C-3 District. Generally, it was found that a larger share of San Mateo and Marin County residents work elsewhere in San Francisco than in the C-3 District. The percentages are relatively similar for San Francisco residents. For Alameda and Contra Costa counties, lower share of employed residents work elsewhere in the City and larger shares are employed in the C-3 District. Thus, in terms of total propensity to live in a particular county and work in San Francisco, it is highest for San Francisco, followed by Marin County, then San Mateo County, then Contra Costa County, and last, Alameda County.

SUPPLEMENTAL TABLES AND MAPS FOR RESIDENCE PATTERNS AND HOUSING ANALYSIS

TABLE I.7: C-3 DISTRICT MANAGEMENT/TECHNICAL OFFICE EMPLOYEES LIVING IN SAN FRANCISCO, UNDER THE DOWNTOWN PLAN AND ALTERNATIVES, 1981 - 2000

				2000					
					Alternative				
	1981	1984	1990	Downtown Plan	1	2	3	4	5
C-3 District Management/Technical Office Jobs	172,550	185,870	216,220	251,590	261,540	259,530	257,010	247,120	248,470
C-3 District Management/Technical Office Workers Living in San Francisco	84,310	89,030	99,200	110,450	112,720	112,110	111,360	110,020	110,200
Percent of C-3 District Management/Technical Office Workers	48.9%	47.9%	45.9%	43.9%	43.1%	43.2%	43.3%	44.5%	44.4%
City Residents Holding Management/Technical Office Jobs in C-3 District as Percent of All Employed San Francisco Residents	24.4%	25.2%	26.7%	27.8%	28.3%	28.1%	27.9%	27.3%	27.5%

		1990- 2000					
			Alternative				
	1981-1990	Downtown Plan	1	2	3	4	5
Net Increase In Management/Technical Office Workers Living in San Francisco as Percent of Growth of C-3 District Management/Technical Office Jobs	34.1%	31.8%	29.8%	29.8%	29.8%	35.0%	34.1%

SOURCE: Recht Hausrath & Associates

TABLE I.8: C-3 DISTRICT OFFICE EMPLOYEES LIVING IN SAN FRANCISCO, UNDER THE DOWNTOWN PLAN AND ALTERNATIVES, 1990 AND 2000

				2000					
					Alternative				
	1981	1984	1990	Downtown Plan	1	2	3	4	5
C-3 District Office Jobs (Management/Technical and Trade/Customer Service Office)	207,320	223,220	259,400	303,470	315,860	313,130	309,940	297,940	300,060
C-3 District Office Workers Living in San Francisco	106,880	112,150	123,300	136,850	139,940	139,120	138,180	136,400	136,650
Percent of C-3 District Office Jobs	51.6%	50.2%	47.5%	45.1%	44.3%	44.4%	44.6%	45.8%	45.5%
City Residents Holding Office Jobs in C-3 District as Percent of All Employed San Francisco Residents	30.9%	31.8%	33.2%	34.4%	35.2%	34.9%	34.7%	33.8%	34.1%

		1990-2000					
			Alternative				
	1981-1990	Downtown Plan	1	2	3	4	5
Net Increase in Office Workers Living in San Francisco as Percent of Growth of C-3 District Office Jobs	31.5%	30.8%	29.5%	29.5%	29.5%	34.0%	32.8%

SOURCE: Recht Hausrath & Associates

TABLE I.9: EMPLOYEE RESIDENCE PATTERNS FOR THE C-3 DISTRICT, BY BUSINESS ACTIVITY, 1984 AND 1990

		Workers By Business Activity				
1984	Total C-3 District	Management/ Technical Office	Trade/ Customer Service Office	Retail	Hotel	Cultural/Institutional/ Educational
	%	%	%	%	%	%
San Francisco	55.5	47.9	61.9	77.2	82.4	71.2
East Bay	25.6	32.5	12.0	10.9	9.6	18.2
South Bay	12.1	11.0	20.8	9.5	6.5	8.8
North Bay	6.8	8.5	5.3	2.4	1.5	1.8
Other	small	0.1	small	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1990						
San Francisco	52.8	45.9	55.8	77.2	82.4	68.2
East Bay	27.5	33.9	16.4	10.8	9.6	20.5
South Bay	12.4	11.2	22.0	9.5	6.4	9.4
North Bay	7.3	8.9	5.8	2.5	1.6	1.9
Other	small	0.1	small	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

NOTE: Residence patterns are not included here for industrial/warehouse/automotive/parking workers, building maintenance/security workers, and construction workers.

SOURCE: Recht Hausrath & Associates

TABLE I.10: EMPLOYEE RESIDENCE PATTERNS FOR THE C-3 DISTRICT, BY BUSINESS ACTIVITY, 2000

		Workers By Business Activity				
Downtown Plan	Total C-3 District %	Management/ Technical Office %	Trade/ Customer Service Office %	Retail %	Hotel %	Cultural/Institutional/ Educational %
San Francisco	50.2	43.9	50.9	75.5	79.8	68.0
East Bay	29.3	35.3	19.9	11.7	11.0	20.7
South Bay	12.7	11.3	22.6	9.7	7.2	9.2
North Bay	7.8	9.4	6.5	3.1	2.0	2.1
Other	small	0.1	0.1	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Alternative 1						
San Francisco	49.2	43.1	50.1	73.3	78.3	65.5
East Bay	29.9	35.8	20.2	12.7	11.8	22.3
South Bay	12.9	11.5	23.0	10.6	7.8	9.9
North Bay	8.0	9.5	6.6	3.4	2.1	2.3
Other	small	0.1	0.1	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE I.10: EMPLOYEE RESIDENCE PATTERNS FOR THE C-3 DISTRICT, BY BUSINESS ACTIVITY, 2000 (Dontinued)

		Workers By Business Activity				
	Total C-3 District	Management/ Technical Office	Trade/ Customer Service Office	Retail	Hotel	Cultural/Institutional Educational
Alternative 2	%	%	%	%	%	%
San Francisco	49.3	43.2	50.4	73.4	78.3	66.2
East Bay	29.8	35.7	20.1	12.7	11.8	21.9
South Bay	12.9	11.5	22.9	10.5	7.8	9.7
North Bay	8.0	9.5	6.5	3.4	2.1	2.2
Other	small	0.1	0.1	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Alternative 3	%	%	%	%	%	%
San Francisco	49.5	43.3	50.7	73.8	78.3	66.2
East Bay	29.7	35.6	20.0	12.4	11.8	21.9
South Bay	12.8	11.5	22.8	10.4	7.8	9.7
North Bay	8.0	9.5	6.5	3.4	2.1	2.2
Other	small	0.1	small	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE I.10: EMPLOYEE RESIDENCE PATTERNS FOR THE C-3 DISTRICT, BY BUSINESS ACTIVITY, 2000 (Continued)

		Workers By Business Activity				
Alternative 4	Total C-3 District %	Management/ Technical Office %	Trade/ Customer Service Office %	Retail %	Hotel %	Cultural/Institutional/ Educational %
San Francisco	51.1	44.5	51.9	76.2	81.0	68.7
East Bay	28.7	34.9	19.5	11.3	10.3	20.3
South Bay	12.5	11.2	22.2	9.5	6.8	9.0
North Bay	7.7	9.3	6.4	3.0	1.9	2.0
Other	small	0.1	small	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Alternative 5	%	%	%	%	%	%
San Francisco	50.8	44.4	51.3	76.0	80.5	68.3
East Bay	29.0	35.0	19.8	11.5	10.6	20.5
South Bay	12.5	11.2	22.5	9.5	7.0	9.1
North Bay	7.7	9.3	6.4	3.0	1.9	2.1
Other	small	0.1	small	0.0	0.0	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

NOTE: Residence patterns are not included here for industrial/warehouse/automotive/parking workers, building maintenance/security workers, and construction workers.

SOURCE: Recht Hausrath & Associates

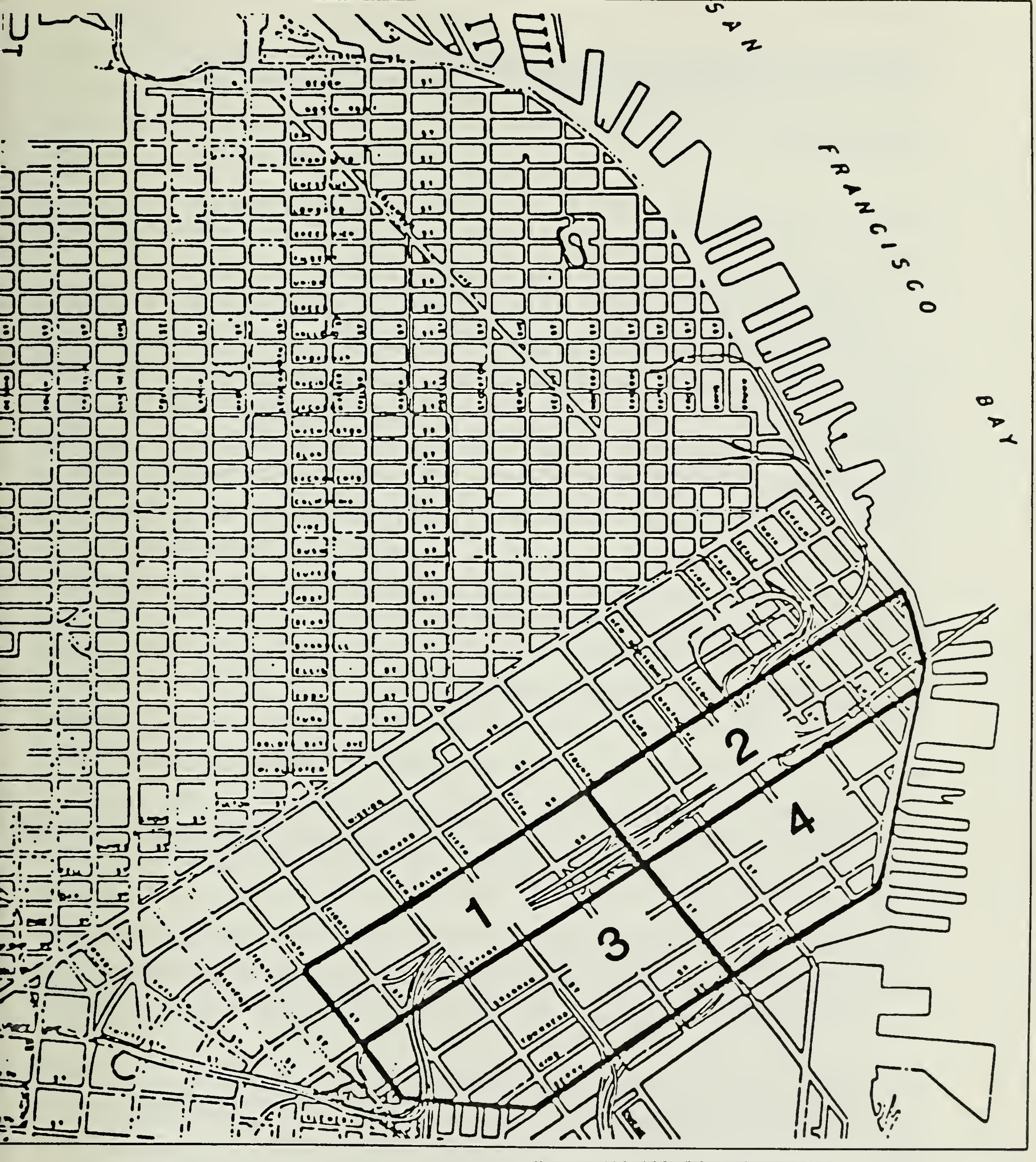


FIGURE I.2:
SOUTH OF MARKET / FOLSOM SURVEY AREA AND SUBAREAS

SOURCE: Recht Hausrath & Associates

APPENDIX J: TRANSPORTATION ANALYSES AND METHODOLOGIES

INTRODUCTION

Analysis of transportation impacts in this report required projections (forecasts) of travel patterns for three different years (1984, 1990, and 2000). Prior to making the projections, an analysis of existing conditions was undertaken to establish the travel patterns of C-3 District users (both employees and visitors) and to establish travel patterns on roadways and transit systems serving the C-3 District, downtown San Francisco, and San Francisco as a whole. Existing travel patterns on the transportation network were determined by obtaining traffic volume counts, transit ridership counts and pedestrian volume counts. The counts were a combination of data collected previously by others (City Departments and other consultants) and new data collected as part of this study. Capacities for each of the transportation modes were determined from field measurements, analysis of count data and schedule calculations. The operating conditions for each transportation mode were determined and used to chronicle overall conditions in the transportation network serving San Francisco and the C-3 District.

C-3 DISTRICT EMPLOYER/EMPLOYEE SURVEY

Surveys of C-3 District employers, employees and visitors were used to document the travel patterns of C-3 District users. Analysis of the survey results yielded travel patterns for C-3 District employees. Similar travel patterns for visitors were calculated from a survey of visitor travel at specific locations in the C-3 District./1/

Appendix F, Employer and Employee Surveys, discusses both the development of the survey methodology (sampling technique) and the survey instrument (questionnaire). For details relating to those aspects of the survey, the reader may refer to that appendix.

The Employee Survey is critical in the development of the transportation data base used in the preparation of this report. It provides a baseline for the current residential distribution of workers; journey-to-work mode of travel; travel times for arrival and departure at the place of employment; parking locations; cost of parking, and commute travel time. The Employee Survey also included an assortment of questions about employees' perceptions of transportation conditions that have been used in sensitivity testing of the mitigation measures and other programs. Although the

Employee Survey was used to collect information about travel patterns, the survey was not designed to collect trip generation data. The survey data provide specific transportation information about the C-3 district of San Francisco and its workers that would not be available from any other source.

TRAVEL DEMAND ANALYSIS

Projections of travel demand were developed for the years 1984, 1990, and 2000. Forecasts of future travel were made using a travel demand analysis. The analysis included three components: trip generation, trip distribution and trip assignment. Future modal splits (distribution/assignment of travel to specific transportation modes) were developed as part of the travel demand process and used to make trip assignments. The travel patterns of C-3 District users were compared to the overall travel patterns on the transportation network to determine the proportion of non-C-3 District travel taking place on the transportation network.

The process used to estimate future travel is similar to the process used in project EIR analysis in that trip generation rates and modal splits were used to calculate estimates of future transit ridership and vehicle travel. However, the basis of the travel demand analysis (the employment forecast) is different from that used in a project EIR; as is the presentation of the trip generation rates.

Project EIR analysis uses the sum of downtown office and retail space under formal review by the City, approved by the City Planning Commission, or under construction as the basis of the cumulative impact analysis./2/ The project EIR type of analysis has been described as a Land Use cumulative analysis, in which the travel from the development proposed in the downtown is added to existing travel to determine future conditions. Employment projections that are derived from such a list provide a simple way to calculate future new growth, hence new travel demand. The limitations to such an approach are the following: there is not an equally simple way to discount concurrent employment losses; less than 100% occupancy of proposed buildings; and development proposals that are not started at all or are started much later than the sponsor initially indicated. The list-derived forecast responds to state statutory requirements for cumulative analysis.

An alternative method of forecasting future employment was begun by City staff with the assistance of MTC (Metropolitan Transportation Commission) and ABAG (Association of Bay Area Governments). Those projections are based on historic employment trends for the City and the Region. Future estimates of total employment in the downtown are an apportionment of projected future regional employment. These employment forecasts were used to estimate downtown travel demands. This work has come to be known as the "Employment Trend Method."/3/

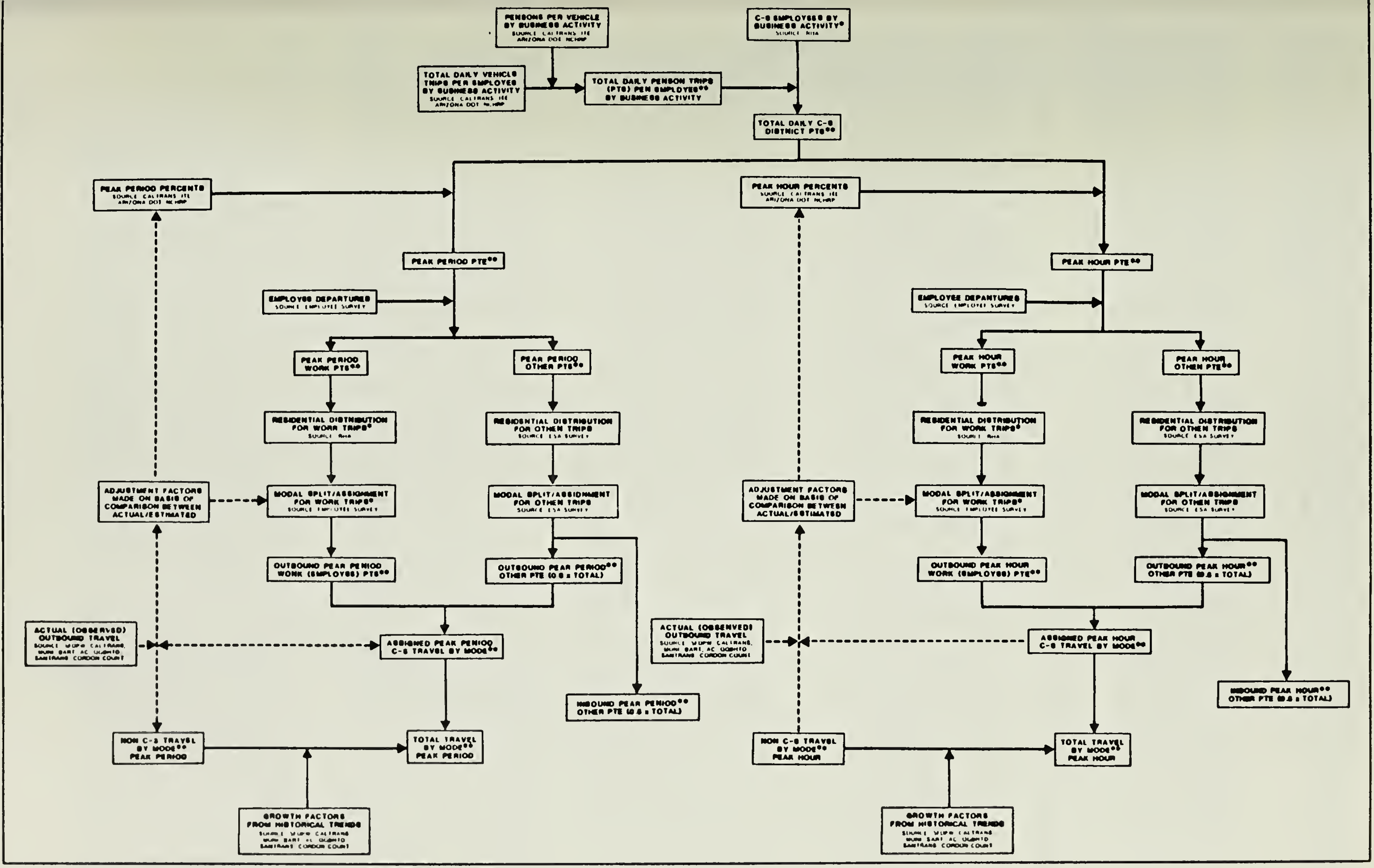
The methods used to project future land use and employment in this analysis may be considered a hybrid of the two approaches. Future conditions include development currently proposed in the C-3 District as well as projections of the amounts of additional development and employment that would be absorbed in the C-3 District (see Sections IV.B, Land Use and Real Estate Development, and IV.C, Business and Employment, and Appendices G, Land Use and Real Estate Development Analysis, and H, Employment Analysis, for a complete description of the process). The travel demand analysis models and projects travel from the entire C-3 district over time. This differs from project EIR analysis which simply adds an increment of future travel demand to the existing base. The modeling procedure allows for changes and refinements to employee residential locations and travel demand over time. Project EIR analysis is, by necessity, more limited in nature, as all travel assumptions are held constant over time. Figure J.1 is a flow chart of the modeling procedure used in the travel demand analysis.

The transportation analysis in this report has incorporated growth in travel demand from areas outside the C-3 District through the process of applying historic trends to the non-C-3 travel components. Thus, the type of analysis used in this document presents a complete description of cumulative transportation impacts of downtown development.

Trip Generation

Published trip generation studies were researched to determine the appropriate rates for the downtown study. Trip generation rates were developed for each business activity group identified in the Employment section of this report.

Trip generation rates used in project EIR analysis have traditionally used square footage of land use as a basis. The trip generation rates used in this analysis have used employment as a basis. Usually, at the project EIR level, little is known about the nature


PERSONS PER VEHICLE BY BUSINESS ACTIVITY
SOURCE: CALTRANS, ITE, ARIZONA DOT, NCHRP
C-3 EMPLOYEES BY BUSINESS ACTIVITY*
SOURCE: RHA
TOTAL DAILY VEHICLE TRIPS PER EMPLOYEE BY BUSINESS ACTIVITY
SOURCE: CALTRANS, ITE, ARIZONA DOT, NCHRP
TOTAL DAILY PERSON TRIPS (PTE) PER EMPLOYEE** BY BUSINESS ACTIVITY
TOTAL DAILY C-3 DISTRICT PTE**
PEAK PERIOD PERCENTS
SOURCE: CALTRANS, ITE, ARIZONA DOT, NCHRP
PEAK HOUR PERCENTS
SOURCE: CALTRANS, ITE, ARIZONA DOT, NCHRP
PEAK PERIOD PTE**
PEAK HOUR PTE**
EMPLOYEE DEPARTURES
SOURCE: EMPLOYEE SURVEY
EMPLOYEE DEPARTURES
SOURCE: EMPLOYEE SURVEY
PEAK PERIOD WORK PTE**
PEAK PERIOD OTHER PTE**
PEAK HOUR WORK PTE**
PEAK HOUR OTHER PTE**
RESIDENTIAL DISTRIBUTION FOR WORK TRIPS*
SOURCE: RHA
RESIDENTIAL DISTRIBUTION FOR OTHER TRIPS
SOURCE: ESA SURVEY
RESIDENTIAL DISTRIBUTION FOR WORK TRIPS*
SOURCE: RHA
RESIDENTIAL DISTRIBUTION FOR OTHER TRIPS
SOURCE: ESA SURVEY
ADJUSTMENT FACTORS MADE ON BASIS OF COMPARISON BETWEEN ACTUAL/ESTIMATED
MODAL SPLIT/ASSIGNMENT FOR WORK TRIPS*
SOURCE: EMPLOYEE SURVEY
MODAL SPLIT/ASSIGNMENT FOR OTHER TRIPS
SOURCE: ESA SURVEY
ADJUSTMENT FACTORS MADE ON BASIS OF COMPARISON BETWEEN ACTUAL/ESTIMATED
MODAL SPLIT/ASSIGNMENT FOR WORK TRIPS*
SOURCE: EMPLOYEE SURVEY
MODAL SPLIT/ASSIGNMENT FOR OTHER TRIPS
SOURCE: ESA SURVEY
OUTBOUND PEAK PERIOD WORK (EMPLOYEE) PTE**
OUTBOUND PEAK PERIOD** OTHER PTE (0.6 x TOTAL)
OUTBOUND PEAK HOUR WORK (EMPLOYEE) PTE**
OUTBOUND PEAK HOUR** OTHER PTE (0.6 x TOTAL)
ACTUAL (OBSERVED) OUTBOUND TRAVEL
SOURCE: CALTRANS, MUNI, BART, AC, SAMTRANS CORDON COUNT
ASSIGNED PEAK PERIOD C-3 TRAVEL BY MODE**
ACTUAL (OBSERVED) OUTBOUND TRAVEL
SOURCE: CALTRANS, MUNI, BART, AC, SAMTRANS CORDON COUNT
ASSIGNED PEAK HOUR C-3 TRAVEL BY MODE**
INBOUND PEAK PERIOD** OTHER PTE (0.4 x TOTAL)
INBOUND PEAK HOUR** OTHER PTE (0.4 x TOTAL)
NON C-3 TRAVEL BY MODE** PEAK PERIOD
TOTAL TRAVEL BY MODE** PEAK PERIOD
NON C-3 TRAVEL BY MODE** PEAK HOUR
TOTAL TRAVEL BY MODE** PEAK HOUR
GROWTH FACTORS FROM HISTORICAL TRENDS
SOURCE: CALTRANS, MUNI, BART, AC, SAMTRANS CORDON COUNT
GROWTH FACTORS FROM HISTORICAL TRENDS
SOURCE: CALTRANS, MUNI, BART, AC, SAMTRANS CORDON COUNT

LEGEND

----- CALIBRATION PROCESS ONLY USED FOR 1981/82 TRAVEL DEMAND

* CHANGES FOR EACH TARGET YEAR; 1981/82, 1984, 1990, 2000

** CALCULATED

RHA RECHT, HAUSRATH AND ASSOCIATES

FIGURE J.1:

FLOWCHART OF TRAVEL DEMAND ANALYSIS

SOURCE: Environmental Science Associates, Inc.

of future employment at a project and land use forms the basis of the trip generation at the project level. Because of the refined methodology used to project future land use and employment, the projections of future employment have been made at a very detailed level. The employment projections form a better basis for trip generation than do the projections of land use. Use of the employment projections removes from consideration the effect of differing employee densities (space per person) in similar types of land use (i.e., one office might have more employees in the same amount of space than another office; trip generation by land use square footage does not allow a distinction between the [trip-making] characteristics of the two offices).

A number of the rates from individual types of land uses were combined into a composite rate for one activity. For example, the composite rate for the retail category includes consideration of the rates for shopping centers and restaurants. Trip generation rates for certain activities, such as retailing, presume a discount rate to avoid double-counting of trips and, thus, assume some degree of linked trips. This differs from the EIR approach which attempts to isolate project-generated trips in order to analyze a particular project's impacts on the transportation network./2/ Whereas, this analysis has attempted to model the trip-making for a much more complex entity (the C-3 District) which has a number of different land uses, and a high degree of interaction between them. In order to more accurately predict C-3 District travel demands, it is necessary to engage in a calibration process (which is described in this appendix) to avoid inflating travel demands and, as a consequence, overestimating future travel needs.

The method of data collection used in the published trip generation studies consists of placing automatic counters on driveways to count vehicular traffic entering and exiting a study site. These counts form a cordon around the site and include only traffic to and from the site. Trip generation studies are usually not conducted in central business districts (CBD) since it would be difficult to isolate traffic traveling to or from specific sites in downtown areas. The studies may therefore describe different travel patterns from those in urban central business districts. Travel to and from trip generation study sites by modes other than private automobile (such as walking and transit) is generally considered to be minimal. For this report, approximate person trip rates for specific business activities were developed from the vehicle trip rates by multiplying the vehicle trip rates by the observed vehicle occupancies (persons per vehicle) from the trip generation studies (see Figure J.1). Although the trip generation studies are of predominantly suburban locations, the total daily travel to the study sites has been assumed to be equivalent to the total daily travel generated in any urban location. Thus, the person trip generation rates developed through this process would be applicable independent of location.

The vehicle trip rates, vehicle occupancy, and resulting person trip generation rates used for the C-3 District are shown in Table J.1. The vehicle trip generation rates from the published studies for the individual land uses in each business activity are also shown in Table J.1.

While there appear to be no appreciable distinctions in total trip-making attributable to location in one portion of the United States versus another, there are likely to be differences between suburban and urban settings that influence both the mode and the time of urban travel./4/ Thus, the C-3 District Employee Survey was necessary to establish the time and the mode of travel of San Francisco C-3 District employees, of whom about 70% travel to and from work during morning and evening peak periods of travel.

The p.m. peak-hour and peak-period (two-hour) travel percentages and equivalent person trip generation rates are shown in Table J.2. As shown in Table J.2, the final adjusted peak-hour percentages (based on the employee survey and comparison with existing travel volumes) are lower than the percentages from the references. This difference can primarily be attributed to the spread of C-3 District travel before and after the peak hour. This results, in part, from formal and informal flex-time programs, and from more concentrated peak travel in the suburban areas where the reference trip generation studies were conducted. The differences in the percentages for Retail Trade and Hotel are also partially the result of the downtown context and its effect on activity. Much of the travel to retail and hotel uses is "linked" travel from nearby employment and other activities. In a suburban context, travel to retail and hotel uses would consist of non-linked trips and would occur at different times of the day.

The following example illustrates the trip generation process. For Commercial Office, the trip generation rates were found in Reference 2 (see Table J.1), with a daily rate of 3.6 (rounded from 3.59) vehicle trip-ends per employee. The vehicle occupancies from Reference 2 for offices are 1.2 persons per vehicle for work trips and 1.6 persons per vehicle for other trips. Since each employee has two one-way person trip-ends for work and the vehicle occupancy for work trips is 1.2, the corresponding vehicle travel for

TABLE J.1: DAILY TRIP GENERATION PER EMPLOYEE

Business Activity	Vehicle Trips	Vehicle Occupancy			Person Trips
		Work	Other	Combined	
Commercial Office (a) [2,5]	3.6	1.2	1.6	N/A	5.0
Government Office [5]	6.1	1.2	1.6	N/A	9.0
Branch Banks [1,5]	43.5	N/A	N/A	1.3	56.5
Retail Trade:					
Restaurants [1]	14.0	N/A	N/A	1.7	23.8
Shop. Center [1,5]	16.0	N/A	N/A	1.5	24.0
Composite Rate	14.0	N/A	N/A	1.7	23.8
Hotel [1,2]	11.3	N/A	N/A	1.4	15.3
Cultural/Institutional/Educational:					
Schools/Colleges [5]	13.6	N/A	N/A	1.4	19.0
Theaters [6]	30.0	N/A	N/A	2.5	75.0
Hospitals [5]	6.1	N/A	N/A	1.4	8.5
Composite Rate	13.6	N/A	N/A	1.4	19.0
Indst./Warehouse [4,5]	3.0	N/A	N/A	1.4	4.2
Auto./Parking (b) [2,3]	24.0	N/A	N/A	1.2	28.8

(a) This category includes the management/technical and trade/customer services employment categories.

(b) This rate was discounted as the trips to the parking and auto facilities are the result of trips to the aforementioned uses rather than trips to the parking and auto facilities for their own sake. The industrial/warehouse trip generation rates were used. The total number of employees in this category is small (less than one percent of the total employees) and any error that might enter the calculation by using the lower rate would be unmeasurable in the total.

SOURCES: TJKM Transportation Consultants, from the following:

[1] California Department of Transportation (Caltrans) District 4, Progress Report(s) on Trip Ends Generation Research Counts, 14 reports published periodically from 1964 through 1982.
[2] Institute of Transportation Engineers, Trip Generation, 1979.
[3] San Diego Association of Governments and Caltrans (District 11), San Diego Traffic Generation, 1981.
[4] Arizona Department of Transportation, Arizona Traffic Generation, 1979.
[5] Transportation Research Board, Quick Response Urban Travel Estimation Techniques and Transferable Parameters, National Cooperative Highway Research Program Report 187, 1978.
[6] Transportation Research Board, Protection of Highway Utility, National Cooperative Highway Research Program Report 121, 1971.

TABLE J.2: P.M. PEAK-HOUR AND PEAK-PERIOD PERCENTAGES OF DAILY TRAVEL

Business Activity	Peak-Hour Percentages Reference(a)	Peak-Hour Percentages Adjusted(b)	Peak-Period Percentages Reference(a)	Peak-Period Percentages Adjusted(b)
Management/Technical Office [1,2]	15.0	12.0	18.0	18.0
Government Office [5]	11.0	6.7	14.0	10.0
Trade/Customer Services Office [3]	10.0	8.0	14.0	14.0
Branch Banks [1]	4.0	1.9	5.0	5.0
Retail Trade [1]	6.0	4.2	18.0	8.4
Hotels [1]	7.0	3.2	12.0	7.0
Cultural/Institutional/ Educational [5,6]	9.0	5.8	18.0	12.1
Industrial/Warehouse/ Automotive/Parking [2,3,4,5]	19.0	16.7	20.0	19.0

(a) Percentage from published references (see Table J.1).
(b) Percentages used for C-3 District travel demand analysis; adjusted through the calibration process.

SOURCE: TJKM Transportation Consultants

the two work trips would be 1.7 vehicle trip-ends. The total of 3.6 vehicle trip-ends (vte) per employee less the 1.7 vte for work leaves 1.9 vte that would be non-work travel. Since the vehicle occupancy for non-work trips is 1.6, the total non-work person trip-ends (pte) would be 3.0. Therefore, the total daily person trip-ends per employee would be 2.0 work pte and 3.0 non-work pte for a total of 5.0 pte./5/ The work and non-work trips would not necessarily be made by the same person as the rate calculation includes trips by both employees and visitors.

Continuing the example, a peak-hour percentage (for Management/Technical Office) was obtained from References 1 and 2. However, while Reference 2 indicates 15.9% of the daily trips occur during the p.m. peak hour, Reference 1 (with more detailed information on peak-hour travel) shows average peak-hour totals ranging from 8.2% to 20.6% for offices similar to Management/Technical Office uses in San Francisco (the average for five studies is 11.7%). The rate of 15.9% in Reference 2 was an average of nationwide data (including some of the data in Reference 1). When recent studies in Reference 1 were considered, a composite reference rate of 15% was chosen to begin the adjustment process. A similar process was employed to determine the parameters of the peak-period travel demand.

Because of the differences in times of travel between urban and suburban locations, the peak-period and peak-hour reference percentages were adjusted through a calibration process. The calibration process makes projections using the reference percentages, compares these projections to measured peak-period and peak-hour travel, and adjusts the percentages accordingly. The reference percentages for the peak hour are higher than the adjusted percentages because of a tendency for more employee travel to occur in the peak hour at suburban locations. The peak-period percentages before and after adjustment vary less than the peak-hour percentages which indicates that there is a similar amount of travel taking place in both urban and suburban areas during the two-hour period (the difference being that a greater proportion of the peak-period travel occurs in the peak hour at suburban locations).

The final adjusted peak-hour and peak-period percentages were developed through an iterative process (see Figure J.1) that matched the total trip generation for the peak-hour and peak-period trips with the total derived from the employee survey (see Modal split). The survey total was calculated on the basis of the percent of employees traveling during the peak hour and peak period, with adjustment for employee absenteeism./6/

For other (non-work) trips, the trip generation rates for the peak hour are based primarily on the reference sources (see Table J.1). Although the employee travel in the p.m. peak has been generated using employee departures as a base, the reference data show that the non-work travel is less directionally oriented. The assumption has been made that 50% of the p.m.-peak non-work trips are traveling in a non-commute direction and 50% are traveling in a commute direction. For both employees and visitors, some travel occurs entirely within the C-3 District; this portion of the travel has been included in the regional assignment to the northeast area of San Francisco within the trip distribution process. Table J.3 shows the work (employee) and other travel by business activity for the C-3 District for the years 1981/82, 1984, 1990, and 2000.

Trip Distribution

The distribution of travel to the region is based on employee residence locations for work trips and other origin-destination data for non-work trips. Data from the Employee

TABLE J.3: P.M. PEAK-HOUR AND PEAK-PERIOD C-3 DISTRICT TRAVEL BY BUSINESS ACTIVITY GROUP, 1981/82, 1984, 1990 AND 2000 UNDER THE DOWNTOWN PLAN

	1981			1984			1990			2000		
Business Activity	Work	Non-Work	Total	Work	Non-Work	Total	Work	Non-Work	Total	Work	Non-Work	Total
Peak-Hour (4:30 p.m. - 5:30 p.m.)												
Management/Technical Office	78,100	15,620	93,720	85,000	17,000	102,000	100,660	20,130	120,790	119,160	23,830	142,990
Government Office	8,180	1,640	9,820	7,940	1,590	9,530	7,450	1,490	8,940	6,640	1,330	7,970
Trade/Customer Services Office	8,860	2,950	11,810	9,540	3,180	12,720	11,080	3,690	14,770	13,370	4,460	17,830
Branch Banks	3,130	2,610	5,740	3,340	2,780	6,120	3,760	3,130	6,890	4,390	3,660	8,050
Retail Trade	11,090	11,090	22,180	11,600	11,600	23,200	12,700	12,700	25,400	13,910	13,910	27,820
Hotels	3,990	2,660	6,650	4,150	2,760	6,910	4,900	3,270	8,170	5,980	3,980	9,960
Cultural/Institutional/Educational	1,630	7,330	8,960	1,670	7,510	9,180	1,860	8,360	10,220	1,860	8,360	10,220
Industrial/Warehouse/Automotive Parking	2,080	2,770	4,850	1,950	2,600	4,550	1,700	2,260	3,960	1,320	1,760	3,080
TOTAL	117,060	46,670	163,730	125,190	49,020	174,210	144,110	55,030	199,140	166,630	61,290	227,920
Peak Period (4:00 p.m. - 6:00 p.m.)												
Management/Technical Office	117,140	23,430	140,570	127,130	25,430	152,560	150,990	30,200	181,190	178,740	35,750	214,490
Government Office	12,920	2,580	15,500	12,920	2,580	15,500	11,180	2,240	13,420	9,950	1,990	11,940
Trade/Customer Services Office	20,610	3,440	24,050	19,080	3,180	22,260	22,160	3,690	25,850	26,740	4,460	31,200
Branch Banks	3,140	11,510	14,650	3,330	12,210	15,540	3,750	13,750	17,500	4,390	16,100	20,490
Retail Trade	12,200	32,180	44,380	12,760	33,640	46,400	13,950	36,790	50,740	15,300	40,340	55,640
Hotels	9,310	5,320	14,630	9,670	5,530	15,200	11,420	6,530	17,950	13,940	7,970	21,910
Cultural/Institutional/Educational	2,450	6,950	9,400	5,000	14,180	19,180	5,570	15,790	21,360	5,570	15,790	21,360
Industrial/Warehouse/Automotive Parking	2,110	2,110	4,220	2,260	2,260	4,520	2,260	2,260	4,520	1,760	1,760	3,520
TOTAL	179,880	87,520	267,400	192,150	99,010	291,160	221,280	111,250	332,530	256,390	124,160	380,550

SOURCE: TJKM Transportation Consultants

Survey were used to provide the 1981/82 residence locations for C-3 District employees. The residence patterns for 1984 and future horizons were developed as part of the housing analysis (see Section IV.D, Residence Patterns and Housing for C-3 District Workers). Table J.4 shows the unrefined or raw distribution of total peak-period travel to modes and residence areas, and is meant to illustrate an intermediate step in the process of travel assignment. Subsequent to the travel distribution process, individual trips were assigned to travel corridors.

The relative percentage of C-3 District employees living in each of the four San Francisco transportation study areas (see Figure J.2) is expected to decrease slightly between 1984 and 1990; whereas the percentage of employees living in the Peninsula, East Bay and North Bay counties is expected to increase slightly during the same time period (see Section IV.D, Residence Patterns and Housing for C-3 District Workers). The distributions for those employees traveling during the p.m. peak hour reflect a similar change. This does not mean, however, that the number of C-3 District employees living in San Francisco would decrease. Rather, as C-3 District employment is projected to increase between 1984 and 1990, the declining percentages indicate the number of C-3 District employees living in San Francisco would increase more slowly than the number of C-3 District employees living outside the City. Between 1990 and 2000, the percentage of C-3 District employees living in San Francisco would be expected to continue to decline, and the percentage living in the Peninsula, East Bay and North Bay would be expected to increase, but total numbers of C-3 District employees living in these locations would be expected to continue to increase.

Modal Split/Comparison with Existing Travel

Modal split for 1981/82 work trips is based on the C-3 District survey data. For each Subarea of the C-3 District (see Figure II.1) the percentages of employees residing in the seven residential study areas (see Figure J.2) were determined by applying the survey data at the Subarea level to the overall residential distributions shown in Appendix I. The modal split by residential location for each Subarea was also determined from the survey. These modal splits were used with the number of employees traveling during the peak hour for each Subarea to obtain the total number of trips by mode during the peak hour. The peak-period modal split was analyzed for the entire C-3 District rather than on a Subarea basis. The same process as was used for the peak hour was used to calibrate the peak-period travel demand analysis.

ABLE J.4: P.M. PEAK-PERIOD C-3 DISTRICT TRAVEL DISTRIBUTION (a), 1981/82, 1984, 1990 AND 2000 UNDER THE DOWNTOWN PLAN

		1981/82				1984				1990				2000			
Two Hour Travel Area	Mode	Work PTE	VTE	Other PTE	VTE	Work PTE	VTE	Other PTE	VTE	Work PTE	VTE	Other PTE	VTE	Work PTE	VTE	Other PTE	VTE
San Francisco Downtown / Northeast	Drive Alone	360	360	1,840	1,840	380	380	2,080	2,080	430	430	2,340	2,340	490	490	2,610	2,610
	Carpool	120	40	0	0	130	50	0	0	140	50	0	0	170	80	0	0
	Muni	6,850		5,150		7,240		5,820		8,250		6,540		9,790		7,300	
	BART	120		740		130		830		140		930		170		1,040	
	Walk	9,310		65,430		9,840		74,020		11,220		83,170		13,270		92,820	
	Taxi/Other	320		370		340		420		390		470		460		520	
	Total	17,080	400	73,530	1,840	18,060	430	83,170	2,080	20,570	480	93,450	2,340	24,350	550	104,290	2,610
Northwest	Drive Alone	8,330	8,330	90	90	8,540	8,540	100	100	8,980	8,980	110	110	9,310	9,310	120	120
	Carpool	3,840	1,420	0	0	3,970	1,470	0	0	4,260	1,580	0	0	4,540	1,680	0	0
	Muni	19,730		790		20,440		890		22,110		1,000		23,840		1,120	
	BART	70		0		70		0		70		0		80		0	
	Motorcycle	160	160	0	0	170	170	0	0	180	180	0	0	190	190	0	0
	Bicycle	30		0		30		0		40		0		40		0	
	Walk	160		0		170		0		180		0		190		0	
	Taxi	230		0		240		0		250		0		270		0	
	Total	32,550	9,910	880	90	33,630	10,180	990	100	36,070	10,740	1,110	110	38,460	11,180	1,240	120
Southwest	Drive Alone	11,330	11,330	180	180	11,760	11,760	200	200	12,730	12,730	220	220	13,350	13,350	250	250
	Carpool	3,400	1,260	0	0	3,560	1,320	0	0	3,920	1,450	0	0	4,250	1,570	0	0
	Vanpool	110	10	0	0	120	10	0	0	130	10	0	0	140	10	0	0
	Muni	20,170		1,400		21,260		1,580		23,630		1,780		25,990		1,990	
	BART	2,570		180		2,690		200		2,960		220		3,210		250	
	Motorcycle	110	110	0	0	120	120	0	0	130	130	0	0	140	140	0	0
	Bicycle	80		0		80		0		90		0		90		0	
	Total	37,770	12,710	1,760	180	39,590	13,210	1,980	200	43,590	14,320	2,220	220	47,170	15,070	2,490	250
Southeast	Drive Alone	3,390	3,390	180	180	3,530	3,530	200	200	3,800	3,800	220	220	4,210	4,210	250	250
	Carpool	2,400	890	0	0	2,540	940	0	0	2,780	1,030	0	0	3,180	1,180	0	0
	Vanpool	330	30	0	0	350	30	0	0	380	30	0	0	430	40	0	0
	Muni	4,270		1,400		4,540		1,580		5,040		1,780		5,900		1,990	
	BART	3,280		180		3,470		200		3,800		220		4,340		250	
	Jitney	640		0		680		0		740		0		850		0	
	Motorcycle	280	280	0	0	300	300	0	0	330	330	0	0	380	380	0	0
	Bicycle	10		0		20		0		20		0		20		0	
	Walk	60		0		60		0		70		0		80		0	
	Taxi	270		0		280		0		310		0		310		0	
	Total	14,930	4,590	1,760	180	15,770	4,800	1,980	200	17,270	5,190	2,220	220	19,700	5,810	2,490	250
Peninsula (San Mateo & Santa Clara Counties)	Drive Alone	3,830	3,830	660	660	4,120	4,120	740	740	4,740	4,740	830	830	4,990	4,990	930	930
	Carpool	7,890	2,920	0	0	8,490	3,140	0	0	10,010	3,710	0	0	11,860	4,390	0	0
	Vanpool	160	10	0	0	170	10	0	0	210	20	0	0	240	20	0	0
	Muni	1,140		0		1,220		0		1,440		0		1,710		0	
	BART	3,850		660		4,150		740		5,000		830		5,930		930	
	SamTrans	2,690		0		2,900		0		3,410		0		4,530		0	
	SPRR	3,430		1,310		3,700		1,490		4,360		1,670		5,300		1,880	
	Jitney	90		0		100		0		120		0		140		0	
	Motorcycle	120	120	0	0	120	120	0	0	150	150	0	0	170	170	0	0
	Total	23,200	6,880	2,630	660	24,970	7,390	2,970	740	29,440	8,620	3,330	830	34,870	9,570	3,720	930
East Bay (Alameda, Contra Costa, Napa & Solano Counties)	Drive Alone	1,860	1,860	2,000	2,000	1,930	1,930	2,000	2,000	1,990	1,990	2,260	2,260	2,320	2,320	2,280	2,260
	Carpool	6,990	2,590	0	0	7,780	2,870	0	0	8,700	3,220	0	0	10,050	3,720	0	0
	Vanpool	2,030	170	0	0	2,390	200	0	0	2,840	240	0	0	3,300	280	0	0
	BART	19,400		3,260		21,540		3,940		28,090		4,420		39,200		5,190	
	AC	10,800		0		11,990		0		14,840		0		14,890		0	
	Charter Bus	290		0		320		0		400		0		490		0	
	Total	41,370	4,620	5,260	2,000	45,930	5,000	5,940	2,000	56,860	5,450	6,680	2,260	70,250	6,320	7,450	2,280
North Bay (Marin & Sonoma Counties)	Drive Alone	2,330	2,330	1,230	1,230	2,560	2,560	1,390	1,390	2,940	2,940	1,560	1,560	2,970	2,970	1,740	1,740
	Carpool	1,800	870	0	0	1,980	730	0	0	2,430	900	0	0	2,990	1,110	0	0
	Vanpool	300	30	0	0	330	30	0	0	400	30	0	0	500	40	0	0
	Charter Bus	620		0		680		0		840		0		1,030		0	
	GGT Bus	6,680		530		7,340		590		9,110		670		11,870		740	
	GGT Ferry	920		0		1,010		0		1,360		0		1,680		0	
	Tiburon Ferry	270		0		300		0		370		0		450		0	
	Motorcycle	30	30	0	0	30	30	0	0	30	30	0	0	40	40	0	0
	Total	12,950	3,060	1,760	1,230	14,230	3,350	1,980	1,390	17,480	3,900	2,230	1,560	21,530	4,160	2,480	1,740
	TOTAL(b)	179,850		87,580		192,180		99,010		221,280		111,240		256,330		124,160	

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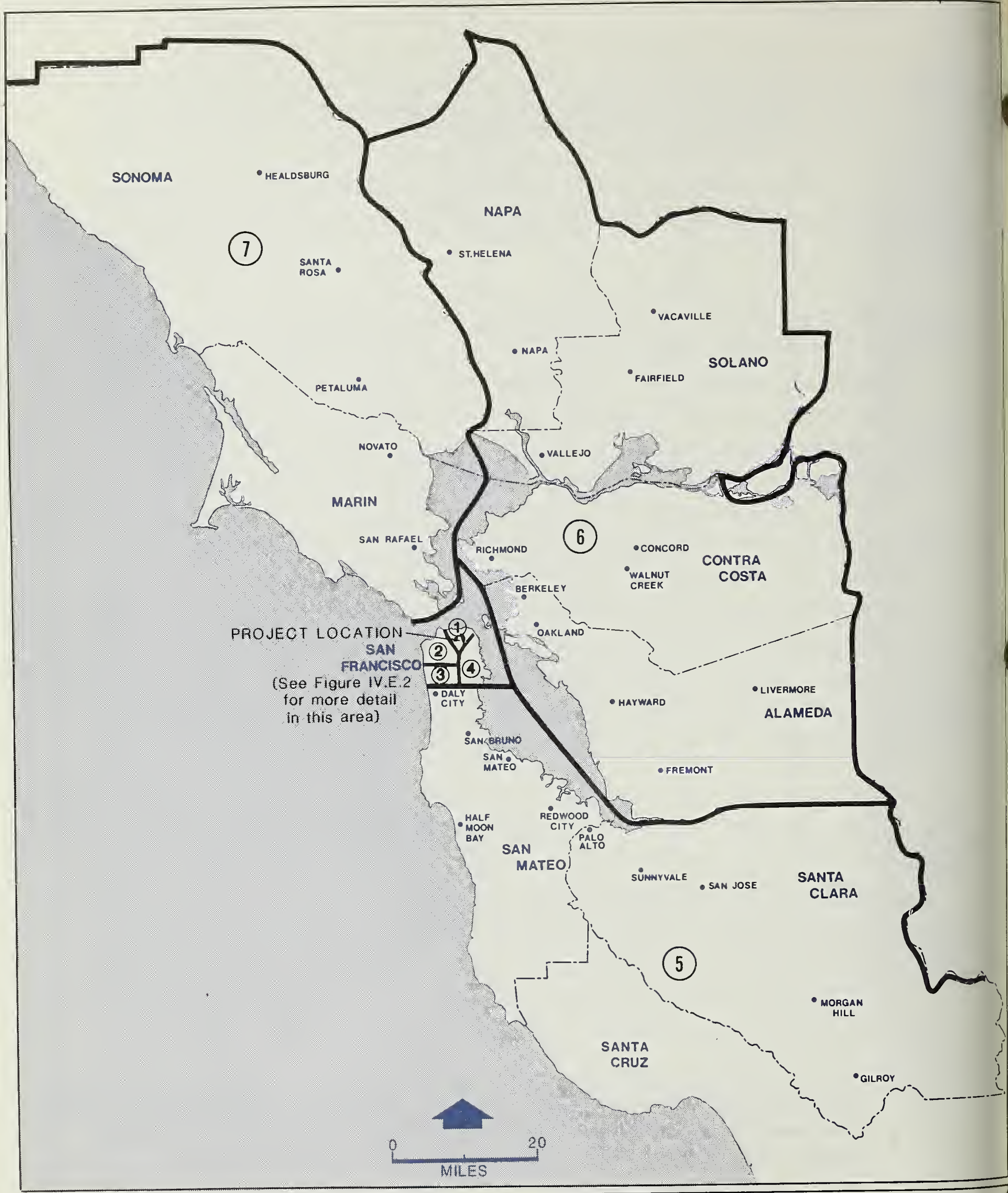
a) Total peak-period travel demand from the C-3 District prior to assignment to outbound travel corridors. The distribution of travel in this Table is an intermediate step in the travel assignment process (see Modal Split and Mode Shift discussions, following).

b) Totals may differ from totals shown in Table J.3 because of rounding.

OURCE: TJKM Transportation Consultants



1 NORTHEAST SAN FRANCISCO
2 NORTHWEST SAN FRANCISCO
3 SOUTHWEST SAN FRANCISCO
4 SOUTHEAST SAN FRANCISCO
5 PENINSULA/SOUTHBAY
6 EASTBAY
7 NORTHBAY

FIGURE J.2:
REGIONAL TRAVEL ASSIGNMENT AREAS

SOURCE: Environmental Science Associates, Inc.

The first iteration of this process produced mismatches between the calculated values (based on the time employees indicated that they leave work) and the actual numbers of commuters for some modes. An adjustment factor was used to approximately match the volumes by mode. In general, for the peak hour, the BART and Muni volumes were decreased and the Drive Alone category was increased. The match between actual and expected peak-period volumes was closer than for the peak-hour and, hence, necessitated only minor modifications to the survey data. BART and Muni volumes were decreased and Drive Alone and Carpool categories were increased.

The calibration process was considered necessary on the basis of the following:

- The trip generation process is designed to estimate the travel from the C-3 District on an "average" day and thus may not correspond exactly to the days chosen as representative for purposes of highway and transit loadings.

- The survey asked employees when they left work, not when they arrived at their primary transportation modes; because definite hour and two-hour periods were analyzed for transit and highway volumes, the time between leaving work and the time of arrival at the transportation mode could alter the results.

- The design of the survey question regarding mode introduced a tendency for respondents to overestimate their use of transit as a mode of travel. The question asked for the "usual" travel mode. It is more likely that persons who regularly use transit to travel to and from the work place may occasionally drive if they anticipate leaving the work place during the day, particularly to travel to areas not served by transit. Persons who regularly drive to and from the work place would not have a corresponding reason to take transit to and from work.

- The presence of linked trips between the different activities and uses in the C-3 District which are most likely to occur during the peak-hour, and to a lesser extent during the peak-period, tended to distort survey findings. These linked trips are primarily pedestrian. Examples of linked trips are trips for shopping, personal business, or meeting friends that take place after work but before the traveler leaves downtown for home. These linked trips in combination with the amount of time it takes to arrive at the commuting mode

> represent an important contribution to the spread of the peak commute period. Linked trips would cause much the same effect on travel within the peak-hour as the difference between time of leaving work and time of arrival at a mode. In the case of a linked trip, an employee departing from one land use within the C-3 District stops at another land use prior to leaving the C-3 District, and although counted as a pedestrian trip, the time of travel by that employee on transit or highway is different from that which might be indicated by the survey data.

Analysis of the survey data for departures from the place of employment in the C-3 District by mode of travel shows a clustering of auto travel within the one-hour period, while transit travel is spread more uniformly over the two-hour period. The adjusted modal splits reflect this tendency. The tendency to cluster may be explained by auto commuters having fewer linked trips within the C-3 District than commuters using other modes of travel.

After application of the adjustment factors, the total number of peak-hour work trips changes slightly for each Subarea. With these changes, the residential locations for employees traveling during the peak hour change, as does the final modal split (shown in Table J.5). These new residential locations and modal splits were used with the number of peak-hour work trips obtained from the trip generation process. The number of work trips estimated by the disaggregate trip generation process and calibration procedure are statistically equivalent to the number of work trips calculated from the aggregate survey data (the totals differ by about two percent)./7/

The peak-period travel was adjusted on an aggregate basis for the C-3 District in a fashion similar to that used for the one-hour peak. Because of an improved correlation between expected and actual travel in the peak period, the adjustments made were minimal compared to the peak-hour adjustments.

For other (non-work) trips, the modal split was developed from a survey of visitors at the Embarcadero Center. The modal split and origin-destination percentages were applied to the person trip-ends for non-work travel developed in the trip generation process. As discussed previously, half of these non-work trips were assumed to be traveling in a commute direction. The commute direction non-work trips were combined with the commute direction work trips to obtain the total travel by mode outbound during the peak hour and peak period for the C-3 District.

TABLE J.5: C-3 MODAL SPLIT; PERCENT OF COMMUTE TRAVEL BY PRIMARY MODE, 1981/82, 1984, 1990 AND 2000

	1981/82		1984		1990(a)		2000(a)	
Mode	Peak Hour	Peak Period	Peak Hour	Peak Period	Peak Hour	Peak Period	Peak Hour	Peak Period
Drive Alone	19.0	17.5	18.4	17.1	16.6	16.1	14.8	14.7
Carpool	17.0	14.7	17.0	14.8	17.3	14.6(b)	17.5	14.5(b)
Vanpool	2.0	1.6	2.0	1.7	2.2	1.8	2.2	1.8
Muni	23.4	29.0	23.6	28.5(c)	22.7(c)	27.3(c)	21.9(c)	26.2(c)
BART	17.6	16.3	17.8	16.7	19.2	18.1	21.7	20.6
AC Transit	6.4	6.0	6.4	6.2	6.5	6.7	5.6	5.8
SamTrans	1.5	1.5	1.5	1.5	1.6	1.5	1.8	1.8
Charter/ club bus	0.8	0.5	0.8	0.5	0.9	0.6	0.9	0.6
SPRR	2.2	1.9	2.2	1.9	2.5	2.0	2.6	2.1
G.G.T. Bus	4.0	3.7	4.1	3.8	4.4	4.1	4.9	4.6
G.G.T. Ferry	0.6	0.5	0.6	0.5	0.8	0.6	0.9	0.7
Tiburon Ferry	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2
Jitney	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.4
Motorcycle	0.3	0.4	0.3	0.4	0.3	0.4	0.2	0.4
Bicycle	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Walk	4.3	5.3	4.3	5.2(c)	4.1(c)	5.2	4.1	5.3
Taxi	0.4	0.5	0.3	0.5	0.3	0.4	0.3	0.4

(a) Modal split for these years has been made on the basis of the assumption that additional transit capacity will be available (see Future Transit Capacities).

(b) Decrease results from Capacity Constraint on the Bay Bridge; decrease in absolute percentage only, carpool travel increases between 1990 and 2000 as shown in Table J.4.

(c) Decrease results from decreased percent of employees living in City, based on projections by Recht Hausrath and Associates.

SOURCE: TJKM Transportation Consultants from C-3 District Employee Survey

Mode Shift/Future Modal Split

Commute travel has been assumed to gradually shift among existing modes over time. The peak-hour mode shift procedure was founded on the assumption that as total commute trips increased the primary shift would be from the Drive Alone category to other modes. This shift is predicated on the assumption that the roadway capacity constraints of regional travel from the downtown area, as well as increasing congestion in the downtown area, would be the primary catalyst in future mode shifts. Choice of travel mode is an individual traveler's decision. The factors that enter into that decision most often include availability of specific modes, proximity to both ends of the trip, and length of time and cost of travel. Individual perceptions of these factors vary, so the lowest cost choice is not always made. Projections of change in modal split usually involve sensitivity analysis of travelers to most of the above factors and attempts to estimate future parameters of travel cost. This analysis has used roadway capacity constraints to predict changes in modal split. The effect of congestion on transportation systems is to increase travel time and cost. Thus, congestion effects have been used to approximate the changes in modal split that would be caused by individuals' reactions to increased travel times and costs. Other factors such as improvement of transit comfort, reliability and, speed; and disproportionate changes in parking costs and fuel costs would also cause changes in the modal split. Because of the difficulty involved in accurately projecting the effects of the tangible and intangible factors involved in modal choice, this analysis has used key factors (i.e. congestion effects) as the basis for projecting modal shift, and has assessed, qualitatively, the effects of the remainder of the factors (see Section IV.E., Transportation and Circulation).

As part of the analysis, specific improvements to transit systems have been assumed to occur over time (see Future Transit Capacities, below). The future transit capacities represent a constraint in the mode shift process. Travel was not assumed to shift from auto to transit in excess of the projected future transit capacities. The future capacities do not include most of the transit improvements that are included in the Downtown Plan. The Downtown Plan presents many policies and implementing actions that would alter the transportation system serving San Francisco. Section V.E., Mitigation, contains discussion of the effects of these policies and actions on the results of the transportation analyses. The net effect of more transit capacity and increased disincentives for auto travel (i.e. loss of parking) that might result from the Plan's policies and actions would be a further shift (than is included in the analysis) from auto use to transit.

Peak Hour

The mode shift for work trips was based on residential locations (which are assumed to be the destination for p.m. peak-hour work trips) and individual modal splits for each C-3 District Subarea (Subarea boundaries are shown in Figure II.1 of Volume 1 of this EIR). Future (1984, 1990 and 2000) residential distributions are presented in Section IV.D and Appendix I.

This peak-hour mode shift process was used for all Subareas on the basis of mode splits for individual residential locations. In some cases, there were very few Drive Alone trips from a particular Subarea to a particular residential location. In this case, no modal shift was assumed to occur.

It should be noted that while trips on all modes would be expected to increase as employment increases, the modal split percentages for each of the regional areas would change as a result of mode shift. Changes in the residential patterns would affect the absolute number of persons on each mode but would not change the modal split percentages. Therefore, the number of Drive Alone trips do not increase in some cases because of mode shift. The total trips for other modes increase more rapidly as mode shift occurs.

The peak-hour mode shift for 1981/82 to 1984 work trips consisted of Drive Alone trips shifting to transit (or ridesharing). The percent change in the mode shift varies by Subarea. For trips within San Francisco, the modal split for Muni was increased with a corresponding decrease in the number of Drive Alone trips. This increase is made on the basis of a predicted 1.5% shift to Muni from autos over five years./8/ This shift to Muni has been assumed to occur throughout the analysis and amounts to a change of about 6% by the year 2000. For Peninsula trips, no shift was assumed for this time period. For the East Bay, the Drive Alone traffic volumes were assumed to remain approximately constant at 1981/82 levels. Modal splits for BART and carpools were increased with a decrease in the Drive Alone modal split. For the North Bay, the Drive Alone traffic volumes were also assumed to remain approximately constant at 1981/82 levels. The mode split for Golden Gate Transit buses was increased and the Drive Alone mode split was decreased. Table J.5 shows the aggregate changes to mode split over time. Similar shifts were assumed for other (non-work) trips.

The peak-hour mode shift for 1984 to 1990 was based on similar assumptions. Table J.5 shows the changes in total mode split. The shift consists primarily of Drive Alone shifting to transit or ridesharing. For trips within San Francisco, the modal split for Muni was increased with a corresponding decrease in the mode split for Drive Alone trips./8/ For Peninsula trips, the mode splits for Caltrain (SPRR) and for SamTrans were increased and Drive Alone was decreased. These increases are based on projections from Caltrans and SamTrans./9/ For the East Bay, the Drive Alone traffic volumes were assumed to continue to remain approximately constant at 1981/82 levels, with an average increase to the mode split of BART. Because of capacity constraints on the Bay Bridge, Drive Alone travel to the East Bay includes excess auto demand (see Section IV.E, Transportation and Circulation for discussion of excess demand). For the North Bay, the Drive Alone mode split was decreased and the mode split for Golden Gate Transit buses was correspondingly increased. The mode split for the Golden Gate Ferry is expected to increase, since an additional ferry (not currently in service) is planned to be returned to service prior to 1990./8/ The improved ferry service and convenience would be expected to attract a substantial number of additional riders into the peak hour.

The peak-hour mode shift for 1990 to 2000 followed the same general pattern (see Table J.5). For trips within San Francisco, the modal split for Muni was increased with a corresponding decrease in the Drive Alone percentage./8/ For Peninsula trips, the modal splits for Caltrain (SPRR) and for SamTrans were increased on the basis of extending the 1990 trend-line projections to 2000. For the East Bay, Drive Alone volumes and AC Transit riders were held relatively constant at 1981/82 and 1990 levels respectively, on the assumption that the primary shift would be from the Drive Alone mode to BART. The BART modal split increases on the basis of expanded BART service and increased vehicular traffic congestion during the peak period (outside the peak hour) on the Bay Bridge. With the expansion of BART capacity, the role of AC Transit transbay service has been assumed to diminish and ridership increases beyond 1990 levels appear to be unlikely. The AC Transit ridership remains essentially equal to the 1990 volumes. For the North Bay, the Golden Gate Transit bus modal split was increased with a decrease in Drive Alone.

Peak Period

The peak-period mode shift from 1981/82 to 1990 is not as prominent as the peak-hour mode shift (see Table J.4 and Table J.5). Within the peak period, there is sufficient highway capacity in most corridors (with the exception of the Bay Bridge) to absorb increases in vehicular demand without causing a major shift in the two-hour modal split. The change in the peak-period Drive Alone mode split is about half the peak-hour change (see Table J.5). Within San Francisco, Drive Alone has been decreased on the assumption of a shift to Muni, similar to the peak-hour mode shift.

The peak-period mode shift between 1990 and 2000 is more pronounced as a result of reaching highway capacities in the corridors to the north and the south. The volumes of automobiles on the freeways have been assumed to increase only slightly over 1990 levels (which accounts for the declining percentages in 2000) with the demand shifting to transit (and a slight increase in ridesharing). Comparison of the year 2000 peak-period volumes with freeway and transit capacities shows that there is excess demand, particularly in the southern San Francisco areas and the East Bay Peninsula corridors. On this basis, an absolute shift of three percent of auto use to transit and an increase of four percent in vehicle occupancy would be achieved for the C-3 District, as a whole, between 1981 and the year 2000.

For other (non-work) trips, the modal split has been assumed to remain essentially the same between 1981/82 and 2000 during both the peak hour and the peak period. This assumption is based on examination of the mode split. It appears from the modal split survey of "other" travelers that non-work regional travel (which represents about 15% of other travel) is minimized during the peak hour. This may be a result of the limited alternative modes available to the non-commute traveler. However, in some cases, peak-hour travel cannot be avoided. The total number of these trips are projected to increase on a daily basis (as the land use intensifies) and during the peak hour and the peak period between the years 1981/82 and 2000, but the modal split is expected to remain essentially constant.

Non-C-3 Travel

Non-C-3 travel is travel that does not have an origin or a destination in the C-3 District yet occurs on the same transportation network as C-3 travel. Travel in this category would be trips from Fisherman's Wharf to Oakland, from Marin county to China Basin from Berkeley to the San Francisco airport, etc. For vehicular trips in San Francisco, the non-C-3 travel was determined from 1981/82 traffic volume counts obtained from the City for each corridor (north, south, east, and west) from each Subarea./11/ The non-C-3 travel was assumed to be the difference between the 1981/82 traffic volumes and the C-3 travel estimated from the travel demand process. Non-C-3 travel was noted in each of the corridors for each of the seven Subareas. For the peak period analysis, the 1981/82 data were supplemented with 1983 data from the Metropolitan Traffic District Cordon Count./11/

During the peak hour, about 8,500 vehicles use the Bay Bridge eastbound. About 6,500 of the eastbound vehicles originate in San Francisco. Peak-hour and peak-period turning movements at on-ramp intersections were analyzed for traffic traveling toward the Bay

Bridge. The approach directions of the turning vehicles were used to categorize travel into C-3 trips or non-C-3 trips. From this method of determining vehicle origin by freeway approach, it was estimated that approximately 3,500 vehicles were traveling to the Bay Bridge from the C-3 District. The travel demand process generates a total of 4,300 vehicular trips to the East Bay from the C-3 District. Therefore, the total peak-hour vehicular trips from the C-3 District to the East Bay are slightly overestimated. It was also noted that approximately 3,000 non-C-3 vehicular trips from San Francisco were destined to the Bay Bridge. During the peak period, there are about 17,500 vehicles eastbound on the Bay Bridge, of which 11,000 originate in San Francisco. The intersection data show that about 6,700 vehicles are from the C-3 District. The travel demand analysis estimates a total of 5,600 vehicles which slightly underestimates the 1981-82 C-3 travel to the East Bay during the peak period.

For the North Bay, the non-C-3 vehicular trips were estimated on the basis of the results of a survey performed by Golden Gate Transit in April, 1980./12/ This survey of drivers crossing the Golden Gate Bridge indicated that 82% were employees in San Francisco. Of the 82%, 44% were employed within two miles of the Ferry Building. This two-mile radius includes the C-3 District. The total peak direction 1981/82 peak-hour vehicular traffic on the Golden Gate Bridge is 6,610 vehicles./13/ It is assumed that employee travel is predominate during the peak hour, and further, that 82% of the total would be San Francisco travel, than 5,420 vehicles per hour would be considered to be San Francisco traffic. The C-3 travel demand process indicates a total of 3,160 vehicular trips across the Golden Gate Bridge, or 58% of the estimated total (work and non-work) San Francisco traffic. The Golden Gate survey indicates the total C-3 traffic is 2,380 vehicular trips. However, 20% of the Golden Gate survey drivers (which would be about 1,100 vehicles in the peak hour) who stated that they worked in San Francisco either indicated that the distance from their work place to the Ferry Building varied or no distance was given. Therefore, the peak-hour C-3 traffic to the North Bay may be overestimated, but the total represents a reasonable approximation. Within the peak period, there are about 13,500 vehicles crossing the Golden Gate Bridge northbound. If the assumption of 82% San Francisco employee travel is applied to the peak period traffic, then about 11,000 vehicles would be from San Francisco employees. Applying the 44% within the C-3 District yields a total of 4,900 vehicles from the C-3 District during the peak period. The travel demand analysis generates a total (work and non-work) of 3,700 vehicles from the C-3 District to the North Bay in the peak period. If, during the peak period, employee travel is not as predominate as during the peak hour, then the 82% and 44% factors would overestimate the actual component of C-3 District travel to the North Bay. Thus, the travel demand analysis slightly overestimates the amount of C-3 District travel to the North Bay in the peak-hour while more closely approximating the peak-period travel.

The non-C-3 travel to the Peninsula includes travel that enters San Francisco on both the Golden Gate and Bay Bridges as well as travel from the rest of the City. The combined p.m. peak-hour southbound total (taken at the County Line) for I-280 and U.S. 101 is approximately 15,000 trips. The cordon count shows that about 7,500 vehicles per hour use the on-ramps in the greater downtown area (exclusive of the ramps onto the Central Skyway). Thus, about half of the travel on US 101 and I-280 southbound originates outside of the downtown area either from the East Bay via the Bay Bridge or from the North Bay and the non-downtown portions of the City via ramps not in the downtown area. During the peak period, total southbound traffic on the two freeways is about 26,700 vehicles, of which about 13,800 enter via ramps in the downtown area. The travel demand process indicates a total of 5,100 vehicles originating in the C-3 District during the peak hour which represents about 68% of the vehicles using the on-ramps in the Downtown area. During the peak period, the travel demand process generates about 7,200 vehicles from the C-3 District to the Peninsula which is about 52% of the vehicles on the Downtown ramps. These totals appear reasonable, considering that the C-3 District is in the northeast part of the City and does not include the Civic Center or the areas south of Folsom Street.

For vehicular traffic, the peak-hour non-C-3 travel for future years was increased based on historical growth trends for each roadway. For the Golden Gate and Bay Bridges, no growth in non-C-3 vehicle trips was assumed on the basis of traffic counts from the past few years./13,15/ Caltrans traffic counts indicate approximately 1.5% per year growth for US-101 and 1.3% per year for I-280 for 1977 to 1980 for peak-hour travel. However, the Caltrans counts are for two-way travel and included all growth. Therefore, rates of 1% per year for the period 1981 to 1990 and 0.5% per year for the period 1990 to 2000 were used for outbound peak-hour non-C-3 travel growth. For streets within the downtown area, the non-C-3 vehicle trips (through travel) were increased by approximately 6% for the period 1981 to 1984, approximately 8% for the period 1984 to 1990, and approximately 10.5% for the period 1990 to 2000. These growth rates are based on the estimated growth in C-3 vehicle trips. It was assumed that the non-C-3 through trips in the downtown would increase at approximately the same rate as the C-3 trips in the downtown area.

Non-C-3 peak-hour travel on BART was determined from ridership data supplied by BART that showed the origin and destination of each trip within the BART system./14/ For transbay trips, approximately 4% (about 600 trips in the peak hour) could be considered non-C-3 travel. Trips from outside the C-3 District that use C-3 District BART Stations are not included in the 4% factor. Thus, non-C-3 travel would be slightly higher than the 4%. The non-C-3 travel was estimated to about 1,000 trips, which when combined with the C-3 District travel from the travel demand process, slightly overestimates existing transbay BART travel during the peak hour. For trips southwest of the Civic Center Station, the total indicated that approximately 10% (about 600 peak-hour trips) were non-C-3 trips. About 700 non-C-3 trips to the southwest were assumed, which, when combined with the C-3 travel, also slightly overestimates the existing peak-hour travel on BART.

During the peak period, there are about 23,300 transbay BART riders, of which about 1,300 are from stations outside of the C-3 District. The travel demand process estimates about 21,000 C-3 District transbay riders. Thus, the remainder would be about 2,300 non-C-3 District transbay riders in the peak period. Southwest of Civic Center during the peak period, there are about 10,600 riders, of which about 1,000 originate in the East Bay. The travel demand process generates about 9,900 C-3 District riders, which slightly overestimates the existing travel on the BART system southwest of Civic Center Station.

For AC Transit, approximately 1,000 peak-hour non-C-3 trips were assumed on the basis of a comparison of estimated C-3 ridership to actual total ridership. During the peak period, AC Transit carries about 12,800 riders. The travel demand process generates about 10,800 C-3 District riders, which leaves about 2,000 non-C-3 riders. The peak-hour and peak-period travel estimates are equivalent to the actual ridership on AC Transit.

Because of the location of the transit routes and stops and the observed characteristics of the ridership on Golden Gate Transit, SamTrans and CalTrain, little non-C-3 District ridership was assumed. The values used were assumed to be within the estimated accuracy of the analysis and thus the amount of travel overestimated or underestimated would be unmeasurable. The travel demand procedure overestimated the total number of existing peak-hour trips on Golden Gate Transit. The peak period travel on Golden Gate Transit is about 7,000 riders. The travel demand process generates about 6,900 peak-period riders. Little non-C-3 travel was estimated for the ferry service on the basis of the location of the Ferry terminal in San Francisco. The travel demand procedure gave an estimate of the ridership essentially equal to the actual ridership on the ferries for both the peak hour and the peak period.

For SamTrans, the travel demand procedure resulted in an estimate approximately equal to the actual ridership for both the peak hour and the peak period. For CalTrain (SPRR), the travel demand procedure resulted in an estimate for the peak hour that was slightly lower than the actual ridership while the peak period estimate essentially approximates actual ridership.

For Muni, the non-C-3 ridership was generally low, primarily because of the location of the outbound screenlines. Non-C-3 Muni travel consists of two components, those passengers boarding outside the C-3 District who travel through the C-3 District to the screenlines, and those passengers boarding between the C-3 District boundaries and the screenlines. In the case of the former, non-C-3 travel through the C-3 District is limited to those Muni routes that do not start or end in the C-3 District which limits the number of non-C-3 trips. In the latter case, the location of the screenlines in relation to the C-3 District boundaries limits the number of Muni riders boarding between the C-3 District and the screenlines. The non-C-3 travel was estimated on the basis of a comparison of the actual volumes with the volumes predicted by the travel demand procedure.

As discussed previously, several assumptions entered into the calibration process. The Employee Survey data have been used on the assumption that the time differential between departure from work and arrival at transportation mode is minimal. Since the time differential in some cases is greater than assumed, the travel demand process has a tendency to overestimate the peak-hour transit ridership. Better correlation was obtain between actual and estimated transit ridership for the peak period, which may be explained by the fact that transit travel in the peak period tends to occur during the middle of the period and is less sensitive to distortion from the time differential between departing work and arriving at a travel mode. All of the estimates used are within the estimated accuracy of the analysis and, thus, the amount of travel overestimated or underestimated from actual volumes would not be statistically measurable.

For future years, non-C-3 travel was increased on Muni on the basis of growth in the downtown area, which was assumed to be similar to that projected for the C-3 District. The non-C-3 Muni ridership in the period 1981 to 1984 was increased by 7% over 1981 levels; for the period 1984 to 1990 the increase was 12% over 1984 levels; and for the period 1990 to 2000, the increase was 20% over 1990 levels; total growth in the period 1984 to 2000 would be 34%. These rates are based on the total assumed City employment growth rate for 1972 through 1981 of approximately 2.4% (compounded annually) as shown in Table IV. C.6. For AC Transit, non-C-3 travel was increased by approximately 5.5% between 1984 and 1990. This increase is based on projections of BART operating at or beyond capacity in the period 1984 to 1987. From 1975 to 1980, bus passengers on the Bay Bridge during the morning peak hour increased by approximately 14%./15/ This increase is approximately 2.7% per year. With the advent of increased BART capacity (expected by 1987 when additional rolling stock would be on-line), AC Transit transbay ridership would be expected to remain stable at 1987 levels. Therefore, for 1985 and 1986, a 5.5% increase was projected, with essentially no additional growth in non-C-3 ridership beyond 1986 on AC Transit.

FUTURE TRANSIT CAPACITIES

Estimates of future transit capacities were made on the basis of proposals contained in the current cycle of Five-Year Plans for each of the transit agencies. The Downtown Plan contains proposals for additional capacity improvements not described in the Five-Year Plans; none of these proposals have been included in the future capacities. For a discussion of the Plan proposals and their effects see Section V.E, Mitigation.

The transit capacities in 1984 were considered to be the same as in 1981/82. For 1990, Muni capacities were increased on the basis of line-by-line improvements shown in the 1983-88 Short Range Transit Plan. The average peak-hour increase would be about 15% over 1981/82./14/ Capacity increases are not solely a function of planned vehicle acquisitions, however. In order to expand service it is necessary to fund both capital and operating expenditures. Expansion of current service requires additional funds that have not been appropriated for drivers, mechanics and other support staff. Capital projects such as vehicle storage facilities are being developed by Muni and PUC staff. It appears likely that capital projects would be fully funded, whereas funding for operational expenditures would be uncertain in the future. Subsidies from federal sources for operational expenditures have been declining in recent years and are expected to be discontinued by 1989. Formula disbursements from state sources are not expected to grow sufficiently to meet the loss of federal funds. Local subsidies require annual appropriations and, thus, are subject to competition from other locally-funded programs.

For BART, additional cars and trains are expected to be added in 1986 and 1987 to increase the peak-hour transbay capacity by 37%./17/ According to AC Transit, no change in the capacity is expected for transbay service./18/ According to Golden Gate Transit, an additional ferry (an existing ferry not currently in service) and an increase of bus capacity of approximately 5% each year is projected, which would result in an increase of approximately 30% between 1984 and 1990, depending on future ridership and funding./10/ For SamTrans, an increase in capacity of approximately 15% is projected between 1984 and 1990./9/ For CalTrain (SPRR), the 15% increase projected is based on the acquisition of new cars and locomotives./9/

For 1990 to 2000, the transit capacities were increased based on information supplied by the respective transit agencies, as noted below./19/ Muni capacity was increased on the basis of line by line improvements shown in Scenario XIII of Projections of Future Muni Demand and Vehicle Requirements./8/ The increase for Muni would be about 24% between 1981/82 and 2000. This presumes that operating as well as capital funds would be available to provide this capacity increase. For BART, the trains were expected to operate at 2.25 minute intervals by 2000, resulting in transbay operations of 19,600 seats per hour, and 9,500 seats per hour southwest of the Civic Center station. For AC Transit, no increase in transbay capacity was projected. For Golden Gate Transit, the ferry capacity was assumed to remain constant and the bus capacity was assumed to increase by 21% (approximately 2% per year)./19/ For SamTrans, an approximate 29% increase in capacity is projected for the ten years between 1990 and 2000 on the basis of the trends projected in the Five-year Plan./9/ For CalTrain (SPRR), the capacity was assumed to remain the same as in 1990 since the acquisition of additional new equipment is uncertain.

SERVICE VEHICLES

Daily service vehicle trips and hourly parking demand were developed on the basis of stopping rates and parking information from the Center City Pedestrian and Goods Movement Study./20/ Service vehicle trips are included in the total trip generation described previously. Most service vehicles are assumed to make more than one stop. The total (existing plus future) hourly demand for each Subarea for the target years is shown in Table J.6.

TABLE J.6: C-3 DISTRICT HOURLY SERVICE VEHICLE PARKING DEMAND, 1981/82, 1984, 1990, AND 2000 UNDER THE DOWNTOWN PLAN AND ALTERNATIVE 1 THROUGH ALTERNATIVE 5(a)

	Subarea							
Year	1	2	3	4	5	6	7	Total
1981	414	58	78	57	115	129	32	884
1984	475	61	79	57	116	133	32	953
1990	538	65	77	57	122	150	33	1,041
2000								
Plan	576	88	78	59	125	160	33	1,120
Alt. 1	629	89	74	62	133	171	37	1,195
Alt. 2	619	89	79	61	145	170	37	1,187
Alt. 3	599	80	79	63	133	167	36	1,156
Alt. 4	591	73	79	58	129	163	35	1,126
Alt. 5	582	73	77	58	126	162	34	1,112

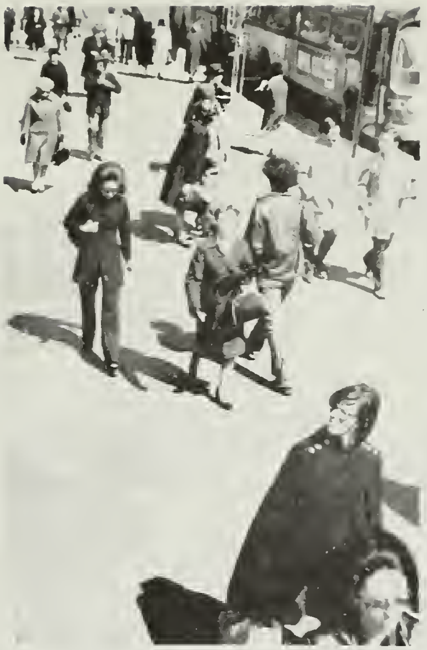
(a) Average parking spaces of demand per daytime (8:00 a.m. - 5:00 p.m.) hour.

SOURCE: TJKM Transportation Consultants from Center City Pedestrian and Goods Movement Study.

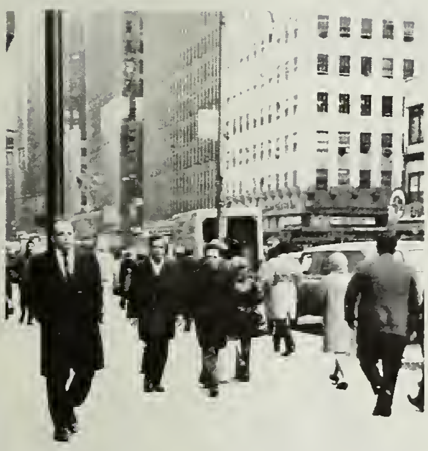
Between 1984 and 1990, the service vehicle parking demand would increase by 9.2% in the C-3 District. Between 1990 and 2000, the demand would vary under the five Alternatives, with 6.8% the smallest increase, under Alternative 5, and 14.8% the largest increase, under Alternative 1. The Downtown Plan would have an increase of 8.0%, slightly larger than the increase under Alternative 5. The increase between 1984 and 2000 for the Plan would be about 18%. This service vehicle parking demand is included in the total equivalent daily parking demand.

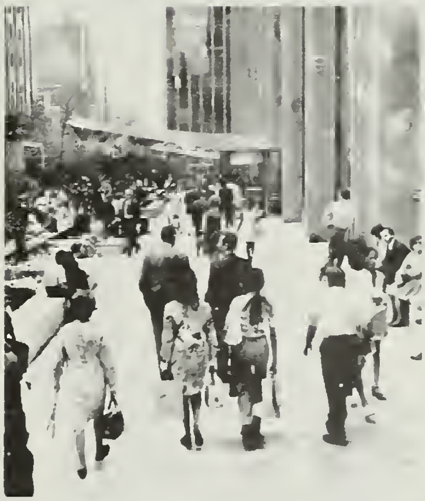
PEDESTRIAN CIRCULATION

Measurement of pedestrian activity is based on an average flow rate of pedestrians per foot of (effective) sidewalk width per minute (p/f/m). These rates vary from approximately 0.5 to greater than 18. The rates have been divided into categories indicating the degree of congestion. The categories and the corresponding flow rates are shown in Table J.7. Figure J.3 illustrates the conditions on sidewalks for each flow rate category.



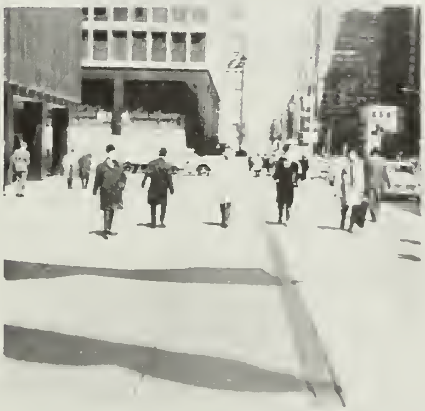
The borderline between IMPEDED and UNIMPEDED FLOW, with about 130 sq ft ($12\ m^2$) per person, or a flow rate of about 2 people per min per ft (6.5 per m) of walkway width. Individuals as well as couples visible in this view have a choice of speed and direction of movement. This rate of flow is recommended for design of outdoor walkways in office districts and other less dense parts of downtown areas.





The uneven nature of UNIMPEDED FLOW. While the people walking in the plaza which is 17 ft (5.2 m) wide, compared to 23 ft (7 m) in the preceding picture have almost 130 sq ft ($12\ m^2$) per person on the average, the space allocation for the eight individuals in the foreground is closer to 70 sq ft ($6.4\ m^2$). Thus, indirect interaction with others is still quite frequent in the upper range of UNIMPEDED FLOW.

The midpoint of the IMPEDED FLOW range, with about 75 sq ft ($6.9\ m^2$) per person, or a flow rate of about 4 people per min per ft (13 per m) of walkway width. Physical conflicts are absent, but pedestrian navigation does require constant indirect interaction with others. This rate of flow is recommended as an upper limit for the design of outdoor walkways in shopping districts and other dense parts of downtown areas.



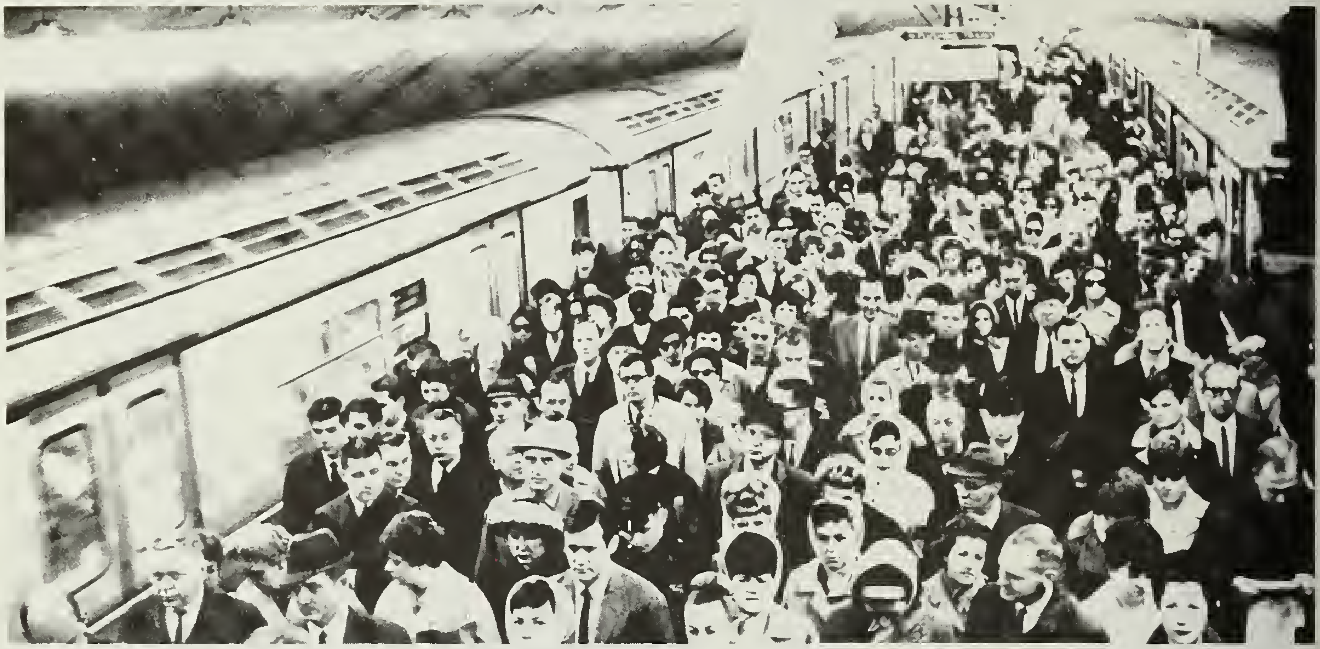
Lower range of UNIMPEDED movement, approaching OPEN FLOW. About 350 sq ft ($32.2\ m^2$) per person, or a flow rate of less than 1 person per min per ft (3.3 per m) of walkway width. Complete freedom to select the speed and direction of movement; individuals behave quite independently of each other. For a design standard based solely on pedestrian density, this amount of space can be considered excessive.

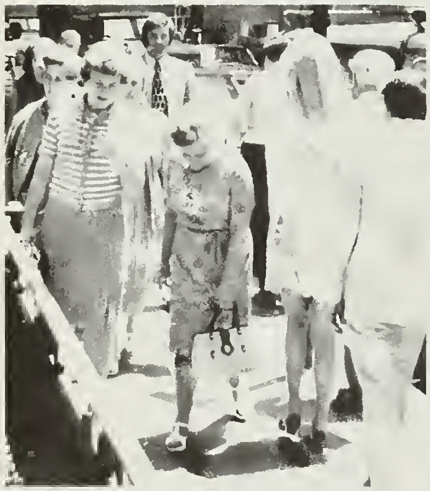
FIGURE J.3:

PHOTOS OF PEDESTRIAN FLOW LEVELS

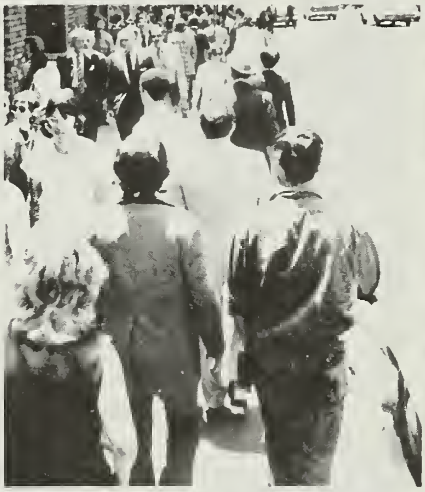
SOURCE: Pushkarev and Zupan

JAMMED FLOW. Space per pedestrian in this view is about 3.8 sq ft (0.35 m^2). This is representative of the lower half of the speed-flow curve, where only shuffling movement is possible and even the extremely uncomfortable maximum flow rate of 25 people per min per ft (82 per m) of walkway width cannot be attained due to lack of space. Photograph by Louis B. Schlivek.

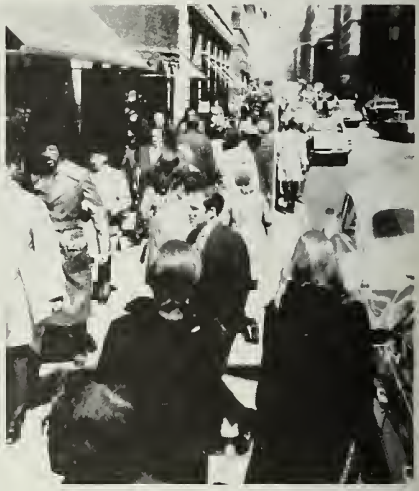




The threshold of CONGESTED FLOW. The first eleven people in the view have about 16 sq ft (1.5 m^2) per person, corresponding to a flow rate of about 15 people per min per ft (49 per m) of walkway width. The beginnings of congestion are evident in bodily conflicts affecting at least three of the walkers, and in blocked opportunities for walking at a normal pace.



The onset of CROWDED FLOW, with an average of about 24 sq ft (2.2 m^2) per person, or a flow rate of about 10 people per min per ft (33 per m) of walkway width. Choice of speed is partially restricted, the probability of conflicts is fairly high, passing is difficult. Voluntary groups of two, of which two can be seen in the picture, are maintained, but cause interference. Note also some overflow into the vehicular roadway in the background.



The midpoint of the CONSTRAINED FLOW range, with about 30 sq ft (2.8 m^2) per person, or a flow rate of about 8 people per min per ft (26 per m) of walkway width. The choice of speed is occasionally restricted, crossing and passing movements are possible, but with interference and with the likelihood of conflicts. The man in the dark suit seems to be able to cross in front of the two women in the foreground quite freely, but in the background near the curb people are having difficulty with passing maneuvers.

FIGURE J.3 (CONTINUED):
PHOTOS OF PEDESTRIAN FLOW LEVELS

SOURCE: Pushkarev and Zupan

The first flow category (or regime) is "Open". This regime indicates very light pedestrian activity with free choice of walking speed and no conflicts. The subsequent categories range from "Unimpeded" to "Impeded" to "Constrained" to "Crowded" to "Congested" and finally to "Jammed" with shuffling movements only and unavoidable conflicts.

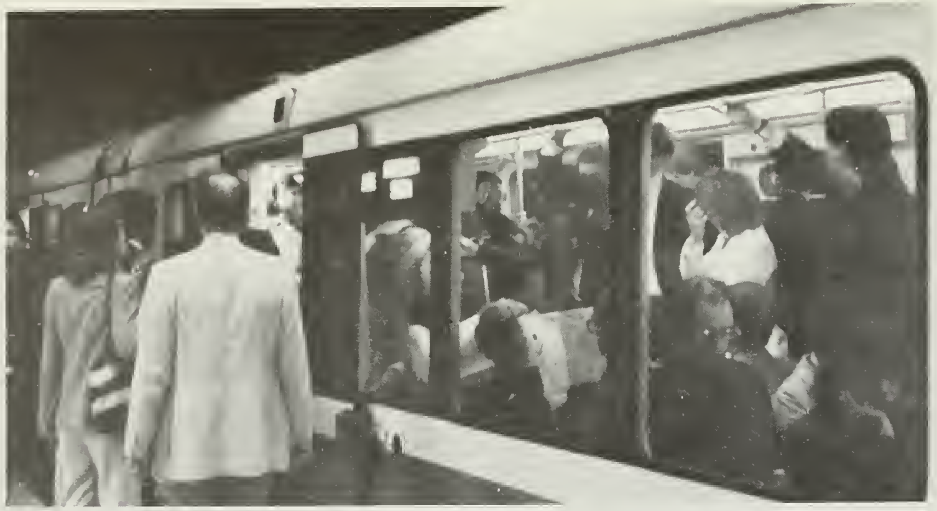
Total sidewalk width is measured as the distance from curb to building; however, effective width is calculated by subtracting the width occupied by obstructions from the total width. Thus, a sidewalk with a total width of eight feet may have a much narrower effective width if trees, poles or other obstructions block part of the sidewalk. The calculation methodology consists of making counts of the total number of pedestrians moving in each direction past a specific point on a sidewalk in a specific period of time. Pedestrians per foot per minute are calculated by dividing the number of pedestrians counted by the length of the count period (in minutes) to give pedestrians per minute. Pedestrians per minute is divided by the effective width of the sidewalk where the count was made to give pedestrians per foot per minute which can be used as an indicator of operating conditions. The noon hour and the p.m. peak hour were chosen as the analysis periods on the basis of a previous study that showed pedestrian activity to be greatest during these two time periods/20/.

TABLE J.7: PEDESTRIAN FLOW REGIMES

Flow Regime	Walking Speed Choice	Conflicts	Average Flow Rate (P/F/M)(a)
Open	Free Selection	None	0.0 - 0.5
Unimpeded	Some Selection	Minor	0.5 - 2
Impeded	Some Selection	Indirect Interaction	2 - 6
Constrained	Some Restriction	Multiple	6 - 10
Crowded	Restricted	High Probability	10 - 14
Design Limit - Upper Limit of Desirable Flow			
Congested	All reduced	Frequent	14 - 18
Jammed	Shuffle Only	Unavoidable	(b)

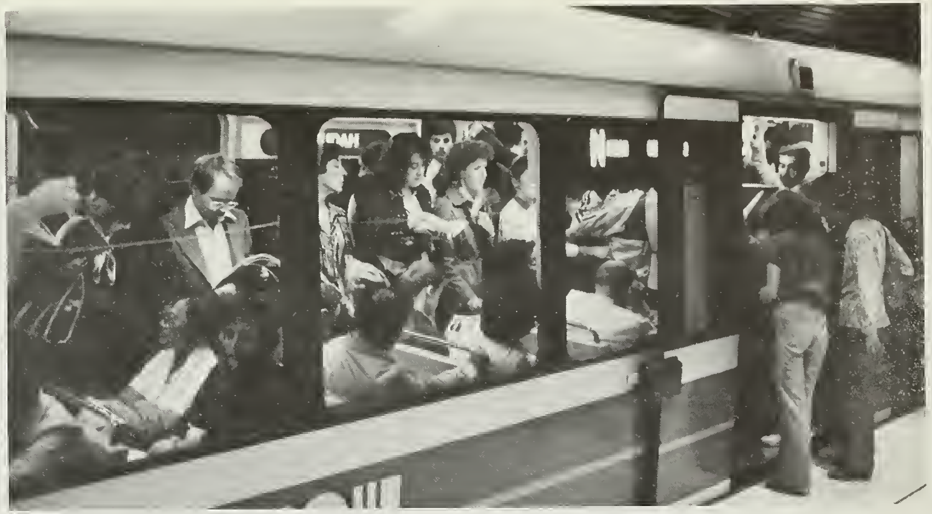
(a) P/F/M=Pedestrians per foot of sidewalk width per minute
(b) For Jammed Flow, the (attempted) flow rate degrades to zero at complete breakdown.

SOURCE: Pushkarev and Zupan, Urban Space for Pedestrians



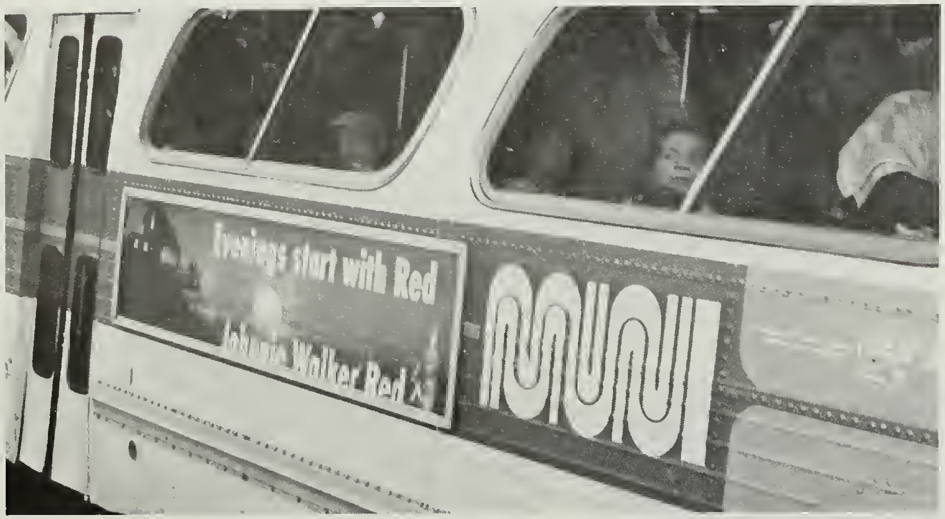
K INGLESIDE - VAN NESS STATION

Wednesday, September 9, 1981 - 8:00 A.M. - Inbound



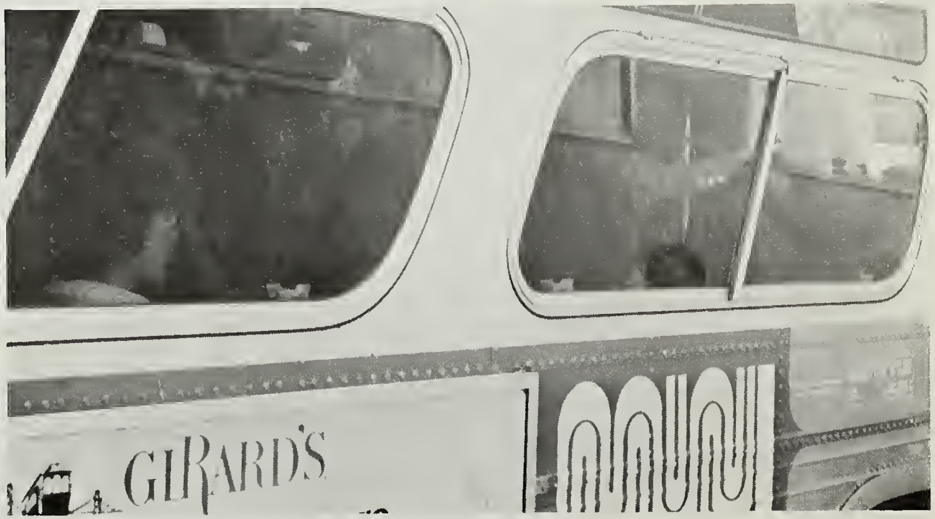
N JUDAH - VAN NESS STATION

Wednesday, September 16, 1981 - 5:00 P.M. Outbound



38 GEARY - VAN NESS AVE. AND O'FARRELL ST.

Wednesday, October 21, 1981 - 9:00 A.M. - Inbound

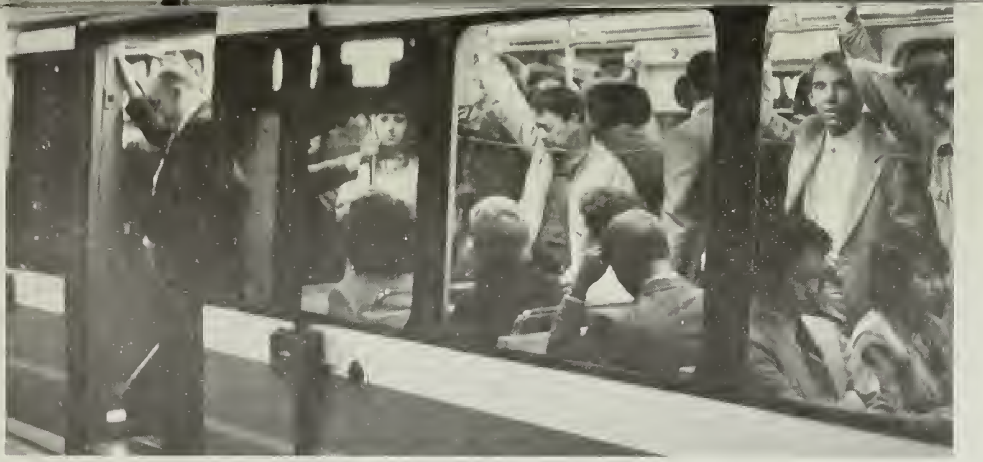


38 GEARY - VAN NESS AVE. AND GEARY BLVD.

Wednesday, October 21, 1981 - 4:20 P.M. - Outbound

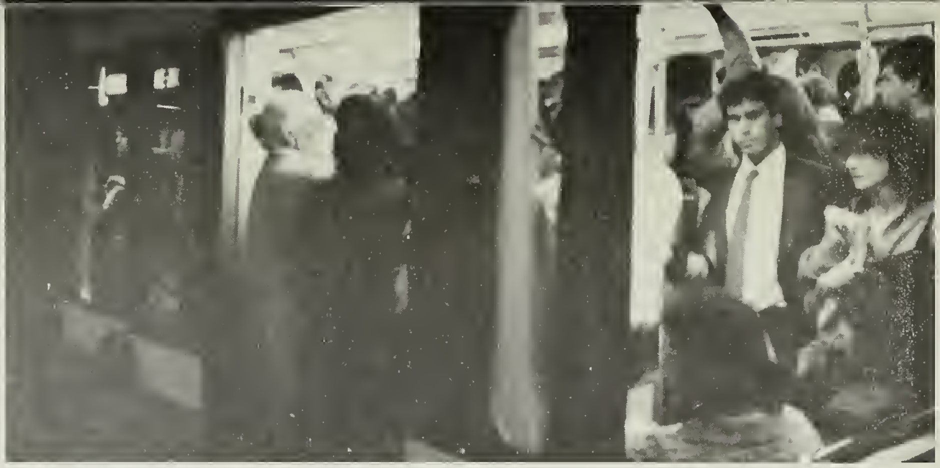
FIGURE J.4:
PHOTOS OF PEAK MUNI LOADING CONDITIONS

SOURCE: Environmental Science Associates, Inc.



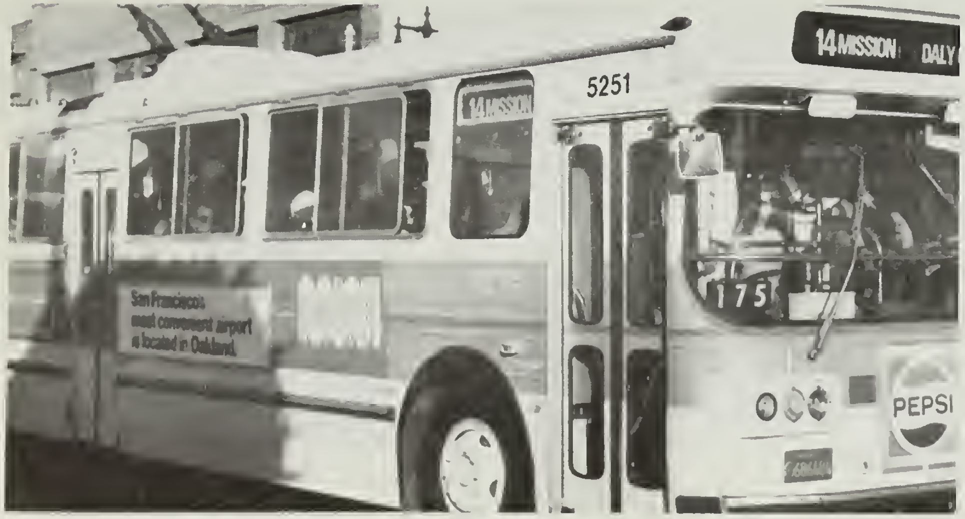
M OCEAN VIEW - CIVIC CENTER STATION

Wednesday, September 9, 1981 - 8:20 A.M. - Inbound



L TARAVAL - VAN NESS STATION

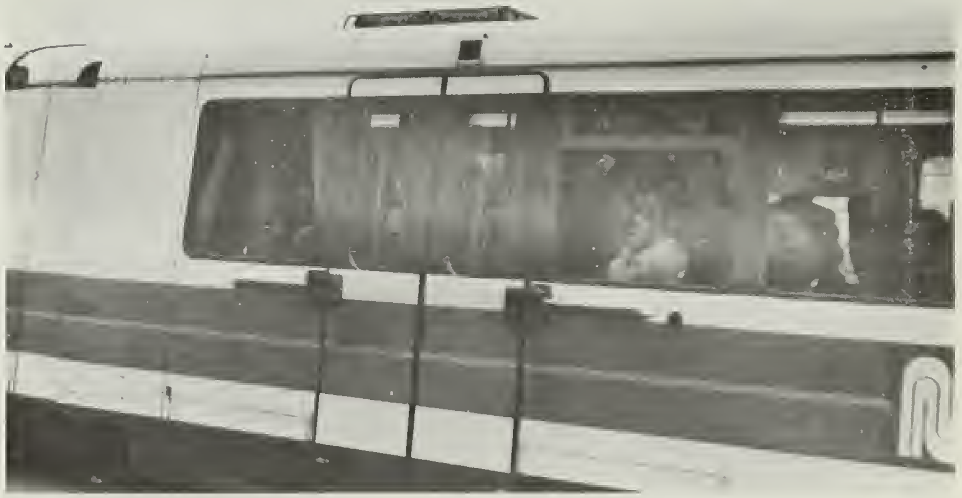
Wednesday, September 16, 1981 - 4:50 P.M. - Outbound



14 MISSION DALY
14 MISSION
5251
San Francisco's most convenient airport is located in Oakland.
175
PEPSI

14 MISSION - MISSION STREET AND SOUTH VAN NESS AVE.

Tuesday, September 29, 1981 5:45 P.M. - Outbound

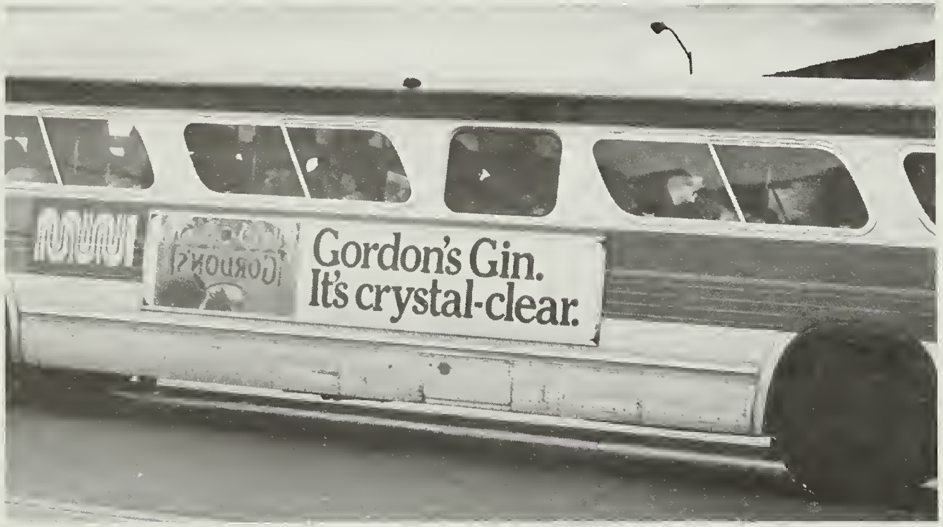


N JUDAH - DUBOCE AND CHURCH

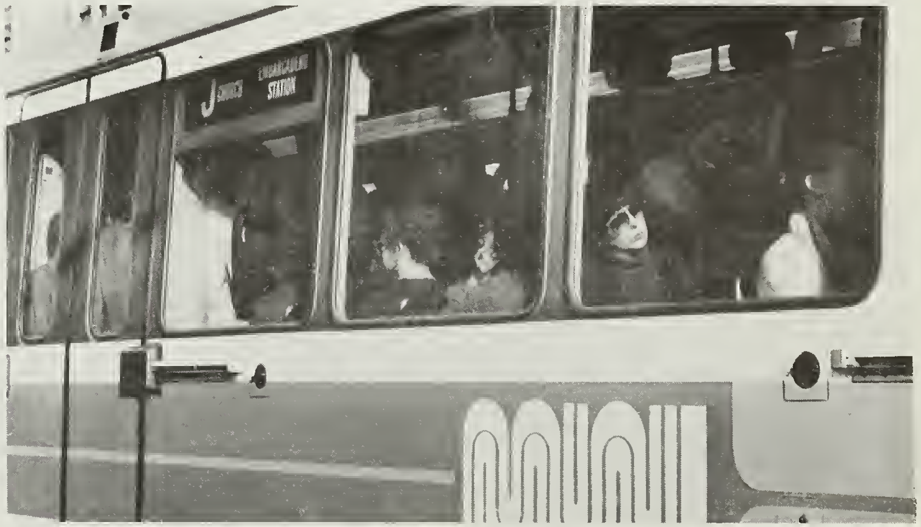
Wednesday, June 8, 1983 - 8:00 A.M. Inbound

FIGURE J.4 (CONTINUED):
PHOTOS OF PEAK MUNI LOADING CONDITIONS

SOURCE: Environmental Science Associates, Inc.



30X MARINA EXPRESS - BAYSHORE AVE. AND ARIETA AVE.
Wednesday, October 7, 1981 - 8:00 A.M. - Inbound



J CHURCH - CHURCH ST. AND DUBOCE AVE.
Tuesday, September 29, 1981 - 9:00 A.M. - Inbound

FIGURE J.4 (CONTINUED):
PHOTOS OF PEAK MUNI LOADING CONDITIONS

SOURCE: Environmental Science Associates, Inc.

TABLE J.8: VEHICULAR LEVELS OF SERVICE AT SIGNALIZED INTERSECTIONS

Level of Service	Description	Volume/Capacity (v/c) Ratio(a)
A	Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	0.00- 0.60
B	Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can be generally described as very good.	0.61- 0.70
C	Level of Service C describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71- 0.80
D	Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81- 0.90
E	Capacity occurs at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting up-stream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91- 1.00
F	Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.	1.01+

(a) Capacity is defined as Level of Service E.

SOURCE: San Francisco Department of Public Works, Traffic Division, Bureau of Engineering from Highway Capacity Manual, Highway Research Board, 1965.

TABLE J.9: TRAFFIC LEVELS OF SERVICE FOR FREEWAYS

Level of Service	Description	Volume/Capacity (v/c) Ratio(a)
A	Level of Service A describes a condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.	0.00- 0.60
B	Level of Service B is in the higher speed range of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted.	0.61- 0.70
C	Level of Service C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained.	0.71- 0.80
D	Level of Service D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.	0.81- 0.90
E	Level of Service E cannot be described by speed alone, but represents operations at even lower operating speeds (typically about 30 to 35 mph) than in Level D, with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration.	0.91- 1.00
F	Level of Service F describes forced flow operation at low speeds (less than 30 mph), in which the freeway acts as storage for queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion. In the extreme, both speed and volume can drop to zero.	1.00+

(a) Capacity is defined as Level of Service E.

SOURCE: Environmental Science Associates, Inc. from information in the Highway Capacity Manual, Special Report 87, Highway Research Board, 1965.

TABLE J.10: PASSENGER LEVELS OF SERVICE ON BUS TRANSIT

Level of Service	Description	Passengers per Seat
A	Level of Service A describes a condition of excellent passenger comfort. Passenger loadings are low with less than half the seats filled. There is little or no restriction on passenger maneuverability. Passenger loading times do not affect scheduled operation.	0.00- 0.50
B	Level of Service B is in the range of passenger comfort with moderate passenger loadings. Passengers still have reasonable freedom of movement on the transit vehicle. Passenger loading times do not affect scheduled operations.	0.51- 0.75
C	Level of Service C is still in the zone of passenger comfort, but loadings approach seated capacity and passenger maneuverability on the transit vehicle is beginning to be restricted. Relatively satisfactory operating schedules are still obtained as passenger loading times are not excessive.	0.76- 1.00
D	Level of Service D approaches uncomfortable passenger conditions with tolerable numbers of standees. Passengers have restricted freedom to move about on the transit vehicle. Conditions can be tolerated for short periods of time. Passenger loadings begin to affect schedule adherence as the restricted freedom of movement for passengers requires longer loading times.	1.01- 1.25
E	Level of Service E passenger loadings approach manufacturers' recommended maximums and passenger comfort is at low levels. Freedom to move about is substantially diminished. Passenger loading times increase as mobility of passengers on the transit vehicle decreases. Scheduled operation is difficult to maintain at this level. Bunching of buses tends to occur which can rapidly cause operations to deteriorate.	1.26- 1.50
F	Level of Service F describes crush loadings. Passenger comfort and maneuverability is extremely poor. Crush loadings lead to deterioration of scheduled operations through substantially increased loading times.	1.51 1.60

SOURCE: Environmental Science Associates, Inc. from information in the Interim Materials on Highway Capacity, Transportation Research Circular 212, pp. 73-113, Transportation Research Board, 1980.

NOTES - Appendix J

/1/ Survey conducted by Environmental Science Associates on June 17, 1982, on three different blocks in the Embarcadero Center. Survey documents and summary of results on file with the Office of Environmental Review, 450 McAllister Street, Fifth Floor.

/2/ San Francisco Department of City Planning, Guidelines for Environmental Impact Review: Transportation Impacts, September 1983. This document describes the procedure used to calculate transportation impacts in project EIRs. This document is on file and available for public review at the Office of Environmental Review, 450 McAllister Street, Fifth Floor.

/3/ The Department of City Planning, Office of Environmental Review (OER), issued a memorandum, July 2, 1982, dealing with the subject of the differences in the land use and employment trend approaches, and recommending that both approaches be used in EIRs to give a balanced assessment of future peak transportation demand. This memorandum is on file with and available for public review at the Office of Environmental Review, 450 McAllister Street, Fifth Floor. The memorandum calls out some of the fundamental differences between the two approaches and also details the limitations of each.

/4/ Institute of Transportation Engineers, Trip Generation, 1979.

/5/ 3.6 total vehicle trip-ends - (2 employee work person trip-ends/1.2 persons per vehicle) = 1.9 other vehicle trip-ends x 1.6 persons per vehicle = 3.0 other person trip-ends; 2.0 employee person trip-ends + 3.0 other person trip-ends = 5.0 total person trip-ends. This calculation and other supporting calculations and analyses are on file with and available for public review at the Office of Environmental Review, 450 McAllister Street, Fifth Floor.

/6/ Employee absenteeism has been calculated on the basis of the Employee Survey data. According to the survey, C-3 District employees are absent from work an average of 24.25 work days per year. The adjustment factor was developed by comparing the days away from work with the total work days in a year (249 excluding 11 holidays). Thus the adjustment factor is 1-(24.25/249) = 0.9026.

/7/The statistical equivalence between calculations using aggregate C-3 District data and calculations using disaggregated (Subarea) data is illustrated in the Summary of Comments and Responses, Transportation Section, Downtown EIR Consultant's Report, Environmental Science Associates, Inc., September 1983, pp. 5-6; and in a memorandum dated October 31, 1983. These documents and a related memorandum of October 25, 1983 are on file and available for public review at the Office of Environmental Review, 450 McAllister Street, Fifth Floor.

/8/ San Francisco Municipal Railway Planning Division, Projections of Future Muni Demand and Vehicle Requirements, October 1982.

/9/ San Mateo County Transit District, SamTrans Five-Year Transportation Development Plan: 1983-1988, April 1983. California Department of Transportation, CalTrain CalTrans/Southern Pacific Peninsula Train Service Five-Year Plan 1983-1988, July 1983.

/10/ Golden Gate Bridge, Highway and Transportation District, Five-Year Transit Development Plan, Fiscal Years 1983/84 - 1987/88, June 1983.

/11/ Traffic volume counts from Department of Public Works, Bureau of Engineering, Division of Traffic Engineering and from 1983 San Francisco Cordon Count, JHK and Associates, July 1983.

NOTES - Appendix J (Continued)

/12/ Telephone survey of 500 drivers conducted in April 1980 by Golden Gate Transit, data supplied by Alan Zahradnik, Transportation Planner, on February 16, 1983.

/13/ Office of the Auditor-Controller, Comparative Record of Traffic for the Month of November, May 27, 1937 through November 30, 1982, Golden Gate Bridge, Highway and Transportation District.

/14/ Ridership data from the Data Acquisition System for BART that shows entrances and exits by passenger by station, data supplied by John Stamus of BART on January 25, 1983.

/15/ Metropolitan Transportation Commission, Travel Observations of the Bay Bridge Corridor, October 21, 1981. Homburger and Dock, Trends in Traffic Patterns at the Bay Bridge and Caldecott Tunnel, U.S. Department of Transportation, DOT-BIP-WP-32-3-77, July 1977.

/16/ San Francisco Municipal Railway, Short Range Transit Plan 1983-1988, July 1983.

/17/ Bay Area Rapid Transit District. Short Range Transit Plan for the Five-Year Period July 1983 through June 1988, July 1983.

/18/ Alameda-Contra Costa Transit District, Five-Year Plan Fiscal Years 1984-1988, May 1983.

/19/ Transit capacity increases between 1990 and 2000 are made on the basis of discussion with the following transit agencies' personnel:

Muni - S. Stropes, D. King, meeting, February 9, 1984;
BART - Ward Belding, telephone conversation, January 12, 1983;
A-C - Eric Harris, telephone conversation, January 12, 1983;
SamTran - Gregory Kipp, telephone conversation, January 13, 1983;
Golden Gate - Alan Zahradnik, telephone conversation, January 14, 1983;
CalTrain - Erick Shotmire, telephone conversation, January 18, 1983;
- Ben Chuck, telephone conversation, January 12, 1983.

/20/ Wilbur Smith and Associates, Center City Pedestrian and Goods Movement Study, City and County of San Francisco, Department of City Planning, September 1981.

K. COMMUNITY SERVICES

SOLID WASTE

All solid waste projections are based upon actual 1981 tonnages using collection routes most closely corresponding to the C-3 District subareas./1/ From these tonnage figures and from known 1981 building floor areas in the C-3 District (see Appendix C), Golden Gate Disposal Company of San Francisco prepared solid waste generation rates in units of pounds per square foot of space per year (see Table K.1). Using these generation rates and the projections for future development from Section V.B, Land Use and Real Estate Development, solid waste generation through the year 2000 was projected.

The 1981 tonnage numbers used in this analysis are the best available because they are recent, based on actual subarea collection weights, and specific to San Francisco. Waste generation figures from several other sources, including the State Solid Waste Management Board, the Environmental Protection Agency and the Final Draft Solid Waste

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TABLE K.1: C-3 DISTRICT SOLID WASTE GENERATION, BY SUBAREA, 1981

Subarea	Tons per Year (a)	1981 Generation Rate (lb per sq. ft. per year)
1	32,240	1.5
2	3,120	1.0
3	7,310	2.5
4	3,350	1.5
5	7,900	1.5
6	11,440	2.0
7	7,250	2.0

(a) Weighed at the Brisbane Transfer Station.

SOURCE: Golden Gate Disposal Company

Management Plan of the City and County of San Francisco, were also examined as part of the analysis. The former two sources were found to be less recent statewide and national averages and therefore not applicable to San Franscisco's current situation. The San Francisco Final Draft Solid Waste Management Plan was used as the reference for total City waste (688,000 tons), but did not contain specific information about C-3 District wastes or waste generation rates.

In the Land Use and Real Estate analysis, Subarea 2 (East South-of-Market) and Subarea 3 (Central South-of-Market) were projected to experience a marked shift in land use over time, primarily from industrial to office use. Subarea 3 would show this trend by 1984, and Subarea 2 would show a similar shift by 1990. Both Subareas are projected to continue this shift through the year 2000. Because of this projected land use trend, the generation rates used for these two Subareas were adjusted to 1.5 lb. per sq. ft. Because office space is expected to be more dominant in the future, office wastes, such as paper, would replace industrial wastes, such as metals and wooden crates, in the waste stream. The generation rates for Subareas 2 and 3 were adjusted to reflect this shift by using a rate developed for Subarea 1, (the Central Office area), the one most dominated by office uses.

POLICE

Distribution of Police Department personnel is shown in Table K.2. The distribution shown is for the City as a whole. Staff assigned to the Central, Southern and Northern Districts (those Districts which serve portions of the C-3 District Study Area) are shown as part of the Field Operations Bureau. All projections of future staffing levels were based on Table K.2 and the following assumptions. It was assumed that the demand for staff time in the Field Operations Bureau (excluding the Traffic Division) and the Investigations Bureau is directly related to the number of criminal incidents reported./2/ It was assumed that demands for Traffic Division service were related to overall traffic levels in the C-3 District./3/ A comparison of changes in personnel over the past five years (1977-82) showed that of the remaining Police Department Bureaus, only the Support Services Bureau and about 85% of the civilian employees were affected by changes in the Field Operations and Investigations Bureaus. Personnel in the Office of the Chief and the Administration Bureau remained almost constant during large fluctuations in the other Bureaus. It was assumed, therefore, that the demand for personnel in the

Support Services Bureau and for 85% of the civilian jobs was directly related to changes in demand for personnel in the Field Operations (including the Traffic Division) and Investigations Bureaus, whereas personnel in the Office of the Chief and the Administration Bureau (including about 15% of the civilian jobs) would not be affected.

Table K.3 shows ranges of criminal incidents reported in 1982 for those reporting areas overlapping each of the seven subareas in the C-3 District Study Area. Although this information should be interpreted qualitatively (because reporting areas are not all exactly the same size, because the fit of reporting areas to subareas varies from subarea to subarea, and because some subareas are overlapped by more reporting areas than are other subareas), some conclusions can be drawn. Subareas showing high numbers of total incidents per reporting area (in comparison with the District averages shown at the bottom of the table) contain "high-crime" areas. These "high-crime" areas also tend to have a large proportion of Part II crimes, which lowers the ratio of Part I / Part II incidents. For example, Subarea 5, the Tenderloin Subarea, could be said to be a "high-crime" area, because it contains reporting areas with high numbers of total incidents (and low Part I / Part II ratios). In contrast, Subarea 2, the East South of Market Subarea, shows comparatively low numbers of reported incidents in its reporting areas (and high Part I / Part II ratios).

Table K.4, below shows reported criminal incidents for 1982 for selected sample addresses. The key contaning the addresses themselves is in Table K.5. Using these crime rates and the projections for future development from Section V.B., Land Use and Real Estate Development, changes in annual crime incidents for the C-3 District through the year 2000 were projected.

Table K.6 shows existing (1981-82) ratios between personnel and reported criminal incidents, based on Tables K.2 and K.4, and on the assumptions listed in the first paragraph in this section. These ratios were used to project how a change in reported incidents would affect demand for Police personnel.

Table K.7 shows existing (1981-82) cost ratios for the Police Department's annual operating budget. The information presented assumes that all operating costs are proportional to the number of personnel in the Department. It is also assumed that Special Programs make up a fixed percentage of the budget. This table was used to project (in 1981-82 dollars) the costs associated with projected demands for additional personnel.

TABLE K.2: SAN FRANCISCO POLICE DEPARTMENT DISTRIBUTION OF PERSONNEL, 1982 (a)

	Exempt	Capt.	Lieut.	Sgt.	Inspector/ Asst. Insp.	Police Officer	Total
Office of the Chief							
Chief's Office Staff	1	0	0	2	2	1	6
Police Commission	1	0	0	0	0	0	1
Intelligence	0	1	0	2	13	10	26
Internal Affairs	0	1	2	7	7	1	18
Community Services	0	0	2	1	3	18	24
Staff Inspection	0	1	0	2	0	0	3
Subtotal	2	3	4	14	25	30	78
Administration Bureau							
Deputy Chief's Office	1	0	0	0	0	0	1
Personnel and Training(b)	0	2	2	10	21	142	177
Planning & Research	0	0	1	4	2	3	10
Fiscal Section	0	0	0	1	0	0	1
Legal Section	0	1	0	1	5	2	9
Subtotal	1	3	3	16	28	147	198
Field Operations Bureau							
Deputy Chief's Office	2	1	0	1	0	2	6
Field Training Office	0	0	1	2	2	66	71
Patrol Division							
Central District (c)	0	1	4	11	5	107	128
Southern District (c)	0	1	3	13	0	79	86
Potrero District	0	1	3	10	2	80	96
Mission District	0	1	3	13	1	110	128
Northern District (c)	0	1	3	12	5	124	145
Park District	0	1	3	10	2	79	95
Richmond District	0	1	4	10	2	55	82
Ingleside District	0	1	3	13	0	79	96
Taraval District	0	1	3	12	1	58	75
Tactical Division	0	1	2	13	13	78	107
Municipal Transit	0	0	1	7	7	48	63
Traffic Division	1	2	4	23	16	82	128
Subtotal	3	13	37	150	56	1047	1306
Investigation Bureau							
Deputy Chief's Office	1	1	0	0	3	0	5
Investigation Division	0	0	7	0	131	0	138
Vice Crimes Division	0	1	2	1	22	24	50
Juvenile Division	0	0	1	0	15	1	17
Subtotal	1	2	10	1	171	25	210

TABLE K.2: SAN FRANCISCO POLICE DEPARTMENT DISTRIBUTION OF PERSONNEL, 1982 (a) (continued)

	Exempt	Capt.	Lieut.	Sgt.	Inspector/ Asst. Insp.	Police Officer	Total
Support Services Bureau							
Deputy Chief's Office	1	0	0	1	0	0	2
Criminal I.D.	0	1	5	9	1	25	41
Communications	0	1	2	5	2	10	20
Criminalistics	1	0	0	3	12	7	23
Property Control	0	0	1	1	0	11	13
Subtotal	2	2	8	19	15	53	99
Total Sworn	9	23	62	200	295	1302	1891
Total Permanent/Temporary Civilian							692
TOTAL STRENGTH							2583

(a) Numbers of personnel shown are actual personnel as of June 30, 1982.
(b) Includes recruits-in-training and sworn personnel who were sick or disabled.
(c) Districts which serve the C-3 District Study Area.

SOURCE: San Francisco Police Department, September, 1982, Annual Report, 1981-82, p. 4.

TABLE K.3: CRIMINAL INCIDENTS IN REPORTING AREAS OVERLAPPING C-3 DISTRICT SUBAREAS, 1982

	Criminal Incidents per Reporting Area			
Subarea	Part I (a) Incidents	Part II (b) Incidents	Ratios of Part I / Part II	Total Incidents
1	271 - 540	138 - 373	1.41 - 1.96	409 - 907
2	164 - 247	33 - 74	2.72 - 8.68	197 - 284
3	148 - 1,639	74 - 1,677	0.62 - 2.72	275 - 3,316
4	333 - 772	290 - 1,292	0.60 - 1.21	623 - 2,064
5	483 - 1,477	498 - 3,124	0.33 - 0.97	981 - 3,597
6	540 - 1,639	367 - 1,589	0.92 - 1.47	907 - 3,316
7	349 - 501	278 - 304	1.26 - 1.65	627 - 805
Average Reporting Area for:				
Central District	493	551	0.89	1,043
Southern District	331	300	1.10	631
Northern District	285	285	1.00	570

(a) Part I Incidents: homicide, forcible rape, strong-arm robbery, armed robbery, aggravated assault, burglary, grand theft (over $200 in 1982), petty theft ($200 or less in 1982), auto theft, purse snatching.

(b) Part II Incidents: non-aggravated assault, arson, forgery and counterfeiting, fraud and embezzlement, receiving stolen property, carrying weapons, sex offenses (except rape), narcotics, gambling, offenses against family and child, malicious mischief, violation of liquor laws, disorderly conduct, drunkeness, drunk driving, traffic violations, other miscellaneous crimes.

SOURCE: Environmental Science Associates, Inc., based on information from the San Francisco Police Department.

TABLE K.4: 1982 REPORTED CRIMINAL INCIDENTS FOR SAMPLE ADDRESSES

Address(a)	Sub area	Land Use	G.S.F. (1000)	Police District & Plot	Incidents Per 1000 G.S.F./Yr.	Homicide	Rape	Strong Arm Robb.	Armed Robb.	Agg. Assault	Non-Agg. Assault	Resid. Burg.	Com. Burg.	Grand Theft	Petty Theft	Auto Theft	Other Reports	Total Inci-dents
1	1	Office	498	C 342	.06									9	11	1	7	28
2	1	Office	1771	C 356	.00									1				1
3	1	Office	1800	S 612	.01	1		1	3				1	6	7		5	24
4	1	Office	442	C 356	.03									3	8		4	15
5	1	Retail	267	C 356	.01								1				2	3
6	1	T. Hotel	818	C 344	.09						2		4	35	11		18	70
7	1	T. Hotel	540	S 608	.07								6	14	6		13	39
8	1	R. Hotel	100	C 356	.10								2	5			3	10
9	1	Resident	345	C 336	.02							2		4			1	7
10	2	Office	179	S 620	.04						1		1	2	1		3	8
11	2	Industry	205	S 622	.13			1		1			2	10	6	3	4	27
12	2	Parking	137	S 622	.09									6	3	2	1	12
13	3	Office	385	S 606	.02					1				2			6	9
14	3	W' House	249	S 618	.00								1					1
15	3	Industry	80	S 616	0													0
16	3	Parking		S 606	0													0
17	4	Office	451	S 602	.01						1		2				3	6
18	5	Office	66	S 604	.17			1		1			2	2	1		4	11
19	5	T. Hotel	1300	C 360	.09				3		4		27	33	2	2	40	111
20	5	R. Hotel	21	S 604	.33								4				3	7
21	5	Resident	21	C 360	.67			1				1		1			11	14
22	6	Office	333	C 362	.06	1							1	4	5		9	20
23	6	Retail	360	C 362	.57					1	7		28	65	66	1	38	206
24	6	T. Hotel	571	C 354	.09						3		15	15	7		14	54
25	6	Education	86	C 606	.05									1		1	2	4
26	7	Office	664	C 348	.01						1			4	1		2	8
27	7	Resident	189	C 348	.08				1		1			5	2	1	5	15
28	7	Education	397	C 348	.02				1					2	2		1	6

(a) See Table K.5 for key to addresses.

SOURCE: Environmental Science Associates, Inc., based on San Francisco Police Department, Incidents for Which a Police Report Was Made, January-December, 1982.

TABLE K.5: SELECTED SAMPLE ADDRESSES FOR TABLE K.4

Address No.	Address
1	Transamerica Building, 600 Montgomery Street
2	Bank of America Headquarters, 555 California Street
3	One Market Plaza
4	Crown Zellerbach, 1 Bush Street
5	Hasting's, 317 Montgomery Street
6	Hyatt Regency, Embarcadero Center
7	Sheraton Palace, 639 Market Street
8	Sutter Hotel, 191 Sutter Street
9	Golden Gate Commons, 440 Davis Court
10	General Electric, 55 Hawthorne Street
11	500 Block Howard Street (industrial)
12	Howard Street Parking
13	Crocker Building, 155 5th Street
14	Emporium Warehouse, 380 Tehama Street
15	Eng-Skell Building, 1035 Howard Street
16	5th & Mission Parking Garage
17	State Compensation Fund Building, 1275 Market Street
18	Grant Building, 1095 Market Street
19	Hilton Hotel, 333 O'Farrell Street
20	Kean Hotel, 1018 Mission Street
21	250 Taylor Street (residences)
22	Flood Building, 870 Market Street
23	Macy's, Stockton & O'Farrell Street
24	Hyatt Union Square
25	San Francisco Community College, 800 Mission Street
26	Hartford Building, 650 California Street
27	700 Block California Street (residences)
28	Cogswell College, 600 Stockton Street

SOURCE: Environmental Science Associates, Inc.

TABLE K.6: EXISTING (1981-82) POLICE DEPARTMENT PERSONNEL RATIOS

Category	Ratio
Patrol (Field Operations Bureau including the Muni Patrol, but excluding the Traffic Division	9.6 persons per 1,000 reported incidents per year
Investigation (Investigations Bureau	1.7 persons per 1,000 reported incidents per year
Traffic (Traffic Division)(a)	0.05 persons per million sq. ft. of building space
Support (Support Services Bureau, 85% of the Department's Civilians)	0.45 persons per other staff

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(a) Based on findings in Gruen Gruen + Associates, March 1981, Fiscal Impacts of New Downtown Highrises on the City and County of San Francisco.

SOURCE: Environmental Science Associates, Inc., based on San Francisco Police Department, August 1982, Annual Report, 1981-82, and Gruen Gruen + Associates, March 1981.

TABLE K.7: POLICE DEPARTMENT COST RATIOS, 1981-82

Category	$/Person/Year
Labor (including fringe benefits)	$45,500
Contractual Services, Expenses, Services of Other Departments	2,400
Equipment and Supplies	700
Special Programs	Additional 0.6% of Budget

SOURCE: Environmental Science Associates, Inc., based on San Francisco Police Department, August 1982, Annual Report, 1981-82.

FIRE

Table K.8 lists the Fire Department units primarily responsible for serving the C-3 District study area. Also shown are the subareas which receive first-level response from each unit, as well as the percent of its total service time and the percent of its total incidents each unit spent in the C-3 District study area in 1982.

Table K.9 shows fire and non-fire incidents for both 1981 and 1982 for selected sample addresses. The incident rates for these buildings were used to project changes in fire and non-fire incidents resulting from projected development in the C-3 District through the year 2000.

Table K.10 shows firefighting unit service hours per fire and non-fire incident in the C-3 District. These factors were derived from Fire Department records of how many service hours per year were spent in the C-3 District and how many incidents were responded to in the C-3 District by each firefighting unit in the City. The factors were used to project the effects of changes in incident rates on the demand for Fire Department service.

TABLE K.8: FIRE DEPARTMENT UNITS PRIMARILY RESPONSIBLE FOR THE C-3 DISTRICT

Station and Units	Subareas Receiving First Response	% Unit's Service Time In C-3 District	% Unit's Incidents In C-3 District
Station No. 13 530 Sansome St.			
Engine Co. 13	1	55.0	51.1
Truck Co. 13	1	45.6	38.7
Division 1	1-7	52.7	46.9
Station No. 1 416 Jessie St.			
Engine Co. 1	4,5,6	72.5	73.4
Truck Co. 1	4,5,6	66.9	64.9
Rescue Co. 1	1-7	57.8	59.5
Station No. 2 1340 Powell St.			
Engine Co. 2	1,7	29.8	30.6
Truck Co. 2	1,7	17.8	17.5
Battalion 1	1,7	38.5	33.2
Station No. 41 1325 Leavenworth St.			
Engine Co. 41	5,7	16.1	16.6
Station No. 3 1067 Post St.			
Engine Co. 3	5	33.3	34.1
Truck Co. 3	5	36.7	36.2
Station No. 36 109 Oak St.			
Engine Co. 36	3,4,5	24.8	26.8
Battalion 2	3,4,5	27.3	27.3
Station No. 8 36 Bluxome St.			
Engine Co. 8	2,3	24.6	31.9
Truck Co. 8	2,3	28.3	33.0
Battalion 3	2,3	52.7	55.4
Pier 22-1/2			
Engine Co. 35	1,2	37.8	34.2

SOURCE: Environmental Science Associates, Inc., based on information from the San Francisco Fire Department.

TABLE K.9: FIRE AND NON-FIRE INCIDENTS IN 1981 AND 1982 FOR SELECTED SAMPLE ADDRESSES

Building	Address	Gross Sq. Ft.	1981 and 1982 Incidents Fire	1981 and 1982 Incidents Non-Fire
Transamerica Building	600 Montgomery Street	523,143	1	5
Shaklee Corporation	444 Market Street	717,936	1	11
Crocker Building	155 Fifth Street	385,000	0	9
Emporium Warehouse	380 Tehama Street	248,975	0	1
Eng-Skell Building	1035 Howard Street	80,000	0	0
Hyatt Regency	5 Embarcadero Center	818,000	0	5
Hyatt Union Square	345 Stockton Street	570,860	1	5
Crystal Hotel	128-132 Eddy Street	70,400	1	1
Empress Hotel	144 Eddy Street	37,746	3	2
Kean Hotel	1018 Mission Street	21,250	0	1
Saks Fifth Avenue	384 Post Street	112,000	0	2
Golden Gate Commons	440 Davis Court	395,000	2	4
Taylor Street Apts.	250 Taylor Street	20,844	0	5
Cogswell College	600 Stockton Street	396,765	0	0
5th & Mission Garage	Fifth & Mission Sts.	723,600	0	5

SOURCE: Environmental Science Associates, Inc., based on information from the San Francisco Fire Department.

TABLE K.10: FIREFIGHTING UNIT SERVICE HOURS FOR FIRE AND NON-FIRE INCIDENTS IN THE C-3 DISTRICT, 1982

	C-3 District Service Hours Per C-3 District Incident (a)	
Firefighting Unit	Fire Incidents	Non-Fire Incidents
Division	0.059	0.014
Battalion	0.163	0.034
Engine Co.	0.436	0.113
Truck Co.	0.232	0.063
Rescue Co.	0.051	0.036

(a) Derived by dividing each unit's total 1982 fire and non-fire service hours spent in the C-3 District by the total number of fire and non-fire incidents reported in the C-3 District for 1982, whether or not that particular unit responded to each incident. Thus, these factors reflect the fact that not all C-3 District incidents are responded to by every unit spending time in the C-3 District.

SOURCE: Environmental Science Associates, Inc., based on information from the San Francisco Fire Department.

NOTES - Community Services

/1/ Manuel Conte, President, Golden Gate Disposal Company, correspondence dated January 21, 1983.

/2/ It should be noted here that a comparison of staffing levels in these Bureaus with changes in reported criminal incidents citywide over the five years 1977-1982 showed almost no correlation. The reasons are that between 1977 and 1979 staff was reduced in response to Proposition 13 funding constraints, while total reported incidents showed a gradual increase. A 1979 Federal Consent Decree (Federal Consent Decree Settlement (1979) of the suit by Officers for Justice et al., versus the San Francisco Civil Service Commission), intended to remedy the situation by mandating that the Department increase staffing levels to a required minimum; the number of personnel for 1980-81, therefore, increased substantially over that for 1979, although there was only a slight increase in reported incidents for that period. This situation indicates that although demand for police time may be affected by criminal incidents, the supply of personnel may be controlled by other factors. Therefore, all discussion of personnel impacts in this section should be interpreted as impacts upon demand for personnel.

/3/ Traffic levels were assumed to be directly related to the amount of building space in the C-3 District. These assumptions, and the relationship between gross square feet of building space and Traffic Division staff, are from Gruen Gruen + Associates, March 1981, Fiscal Impacts of New Downtown High-Rises on the City and County of San Francisco, pp. 32-37.

APPENDIX L: ANALYSIS OF WIND TUNNEL STUDIES

INTRODUCTION

Wind tunnel tests of scale models of proposed buildings have been part of the environmental review process in San Francisco since 1974. Between 1974 and late 1982, 53 proposed building designs in downtown San Francisco were tested in 35 wind tunnel studies using the same methodology to predict the extent and severity of impacts on wind accelerations at ground level. A listing of the buildings included in these analyses is included at the end of this appendix (see Table L.1, p. L.4). The wind tunnel studies provide a data base from which to develop relationships between wind effects and building characteristics.

The approach used in the analyses was to identify building descriptors known to affect wind impacts and to categorize the impact of each design. In this way, combinations of building descriptors that result in increased wind accelerations may be identified. Conversely, combinations of building descriptors that have little or no effect on wind conditions can also be identified.

WIND IMPACT FACTORS

Wind tunnel studies have shown that three basic building characteristics influence wind acceleration:

- the location of the building site on the block,
- the size and uniformity of the building's windward facade, and,
- exposure of the building to the prevailing wind direction.

Building Location

The location of a building within its block has little overall effect on the magnitude of wind accelerations, but does determine where accelerations occur. Because a highrise structure causes wind accelerations along its upwind facade and near the upwind corners, a building on the upwind side of the block has the greatest potential for causing wind accelerations in pedestrian areas. Conversely, a building located on the downwind side of a block has the least potential for pedestrian impacts because wind accelerations occur within the block and over the rooftops of surrounding buildings. Building locations were categorized as follows:

- Category 1 - upwind,
- Category 2 - midblock, and,
- Category 3 - downwind.

No buildings were found to be in Category 3, probably because such buildings are sheltered to a greater extent than buildings at midblock or on the upwind part of a block. Buildings on the downwind edge of the block may not have been tested in the wind tunnel for this reason.

Building Size and Configuration

The shape, area and uniformity of the upwind facade is another factor that determines pressure forces and wind accelerations near a building. Other factors being equal, the greater the area of the facade, the greater the typical wind accelerations at street level. Relatively large, uniform facades typically were found to result in greater wind accelerations than were narrow or complex facades with numerous setbacks.

The extent and uniformity of the upwind facade of each building was categorized as follows:

- Category A - uniform facade,
- Category B - some variation (small setbacks, cutouts), and,
- Category C - irregular (multiple setbacks, cutouts, irregular shape).

Building Exposure to Prevailing Winds

The exposure of a building is simply the amount of the building that extends above upwind buildings. The more exposed a building is, the greater the volume and momentum of the wind intercepted and diverted to street level, and the greater the potential for wind accelerations. Each project for which a wind study was conducted (see Table L.1, p. L.4) was examined to determine the percentage of its upwind facade exposed to winds. Depending on a building's location and orientation, the upwind facade may actually face southwest, west or northwest. The facade most exposed should be used.

Three exposure categories were identified:

- Category 1 - greater than 75% exposed,
- Category 2 - 25% to 75% exposed, and,
- Category 3 - less than 25% exposed.

EVALUATION OF WIND IMPACT FACTORS

By applying the above descriptors to each building studied, a simple designation could be assigned. Thus, a building designated 1-A-2 would be a building located mid-block, with some facade variation, and more than 75% exposed to prevailing winds. By examining the impacts of each building type, the relative importance of each factor or combination of factors was evaluated.

The wind tunnel studies used in this analysis all expressed measured wind speeds as a ratio between the ground level wind and a reference windspeed. The reference windspeed was in all cases the same. Additionally, windspeeds were categorized as ranging from "very low" to "very high." The impact of each building was categorized as follows:

- Little Impact - maximum increase in windspeed ratio less than 50%, and strongest wind measured in the "moderate" category or less;
- Moderate Impact - maximum increase in windspeed ratio 50% or more and/or increased to "high" category; and,
- Significant Impact - increase in windspeed ratio greater than 100% and/or increased to "very high" category.

The analysis showed that location on the block was not necessarily an important factor in determining impacts, but in general, upwind sites resulted in greater impacts than midblock locations. As none of the buildings examined were classified as downwind on the block, no conclusions could be drawn concerning impacts of buildings in these locations. The uniformity of the windward facade was found to be an important factor. Buildings with irregular facades or unusual shapes were all found to have "little impact" on wind accelerations at street level.

The exposure of the upwind facade was found to be the most important determinant of wind impacts. Buildings with less than 25% of their west facades exposed to west winds were generally found to have "little impact."

This analysis makes possible a simple evaluation of potential wind impacts with only basic information on a building. Table L.1 below summarizes the results of the wind tunnel analysis, and indicates for each descriptor category whether wind tunnel studies are recommended. Wind tunnel studies are not recommended for any descriptor categories where only moderate or low impacts were found. No recommendation is made for categories where no data are available. For these cases, a determination as to whether wind tunnel studies are needed should be made by a qualified expert.

TABLE L.1: SUMMARY OF WIND TUNNEL ANALYSIS

Descriptors (See Text) (a)	Total No. of Cases	No. of Cases in Impact Categories: Low	Moderate	Significant	Wind Tunnel Studies Recommended
1-A-1	1	0	0	1	Yes
1-A-2	11	2	5	4	Yes
1-A-3	3	2	1	0	No
1-B-1	3	0	1	2	Yes
1-B-2	3	0	3	0	No
1-B-3	2	2	0	0	No
1-C-1	2	0	2	0	No
1-C-2	3	0	3	0	No
1-C-3	0	0	0	0	—
2-A-1	4	0	1	3	Yes
2-A-2	9	1	5	3	Yes
2-A-3	1	1	0	0	No
2-B-1	2	0	0	2	Yes
2-B-2	9	2	6	1	Yes
2-B-3	0	0	0	0	—
2-C-1	0	0	0	0	—
2-C-2	0	0	0	0	—
2-C-3	0	0	0	0	—

(a) The first digit in the descriptor represents building location (see p. L.1); the middle letter represents the building size and configuration (see p. L.2); the last digit represents the exposure of the building to the prevailing wind direction (see p. L.3).

SOURCE: Donald Ballanti, Consulting Meteorologist

TABLE L.2: DOWNTOWN PROJECTS TESTED IN WIND TUNNEL

PROJECT NAME (a)

1. Spear & Main Street Office Building
2. Hunt-Knight Mixed Use Project
3. 315 Howard Street Building
4. Holiday Inn - Mason and O'Farrell
5. 1 Sansome Street Office Building
6. Howard and Main Office Building
7. California-Powell Condominiums
8. Pine-Kearny Hotel
9. 595 Market Street Building
10. 505 Sansome Street
11. Bank of Tokyo Office Building
12. 444 Market Street Building
13. State Compensation Insurance Fund Building
14. Pacific Lumber Company Building
15. 101 Mission Street Building
16. 101 Montgomery Street Building
17. Holiday Inn - 8th Street
18. Hilton Tower II
19. Ramada Inn
20. Nob Hill Towers
21. San Francisco Federal Savings Building
22. 456 Montgomery Office Building
23. Bechtel Highrises
24. Daon Building
25. Federal Reserve Bank Building
26. Pacific Gateway
27. Montgomery-Clay Office Building
28. 5 Fremont Center
29. 25 Jessie Street Building
30. Hines Building (101 California Street)
31. California/Front Office Building
32. 71 Stevenson Building
33. 562 Mission Street Building

(a) The names listed are those by which the projects were known at the time the wind tunnel tests were conducted. The project name may have changed subsequently.

SOURCE: Donald Ballanti, Consulting Meteorologist

APPENDIX M: SKYLINE IMAGE ANALYSES

The photograph shown in skyline Figures IV.H.6, IV.H.7, IV.H.16, IV.H.17, and VII.20 through VII.24 was taken from Potrero Hill in order to show the entire length of the C-3 study area and to show clearly the portions of the study area in which most future development is forecast to occur. To provide an unobstructed panorama, the photograph was taken from the roof of the former Patrick Henry School (now a City office building) at 639 Vermont Street. The closest approximation of this view at street level is from the corner of Kansas and 19th Streets.

Schematic representations of buildings under construction in 1982 and 1983 are superimposed upon the skyline view shown in Figure IV.H.6 to show the skyline as it will appear in 1984 (see Figure IV.H.7). Figure IV.H.16 adds to Figure IV.H.7 buildings which were approved as of August 25, 1983, buildings on sites for which development applications were filed as of December 1983, and buildings proposed in the Yerba Buena Center Redevelopment Area. These buildings comprise the new development forecast to be completed in the C-3 District by about 1990. Figure IV.H.17 and Figures VII.20 through VII.24 show possible configurations of new construction occuring from 1990 to 2000 as it would appear in the year 2000 under the Downtown Plan and under each of the five Alternatives. Prototypical buildings (see Appendix D) are located on sites which have been identified in the real estate and development analysis (see Appendix G) as likely development sites based on the current intensity of use, employment forecasts (see Appendix H) and forecasts of demand for office space, rents, costs and the constraints on development embodied in the Downtown Plan and each Alternative.

The configuration and massing of individual buildings is based on an analysis of prototypes carried out for the Downtown Plan and each Alternative (see Appendix D). These prototypes conform to height, bulk and other regulations of the Plan and each Alternative, and take advantage of the economically feasible bonuses and incentives they provide. The prototypes represent feasible buildings, not allowable building envelopes. The working basemap used in the preparation of each skyline graphic reflects the total number of additional square feet of office space forecast for the year 2000 under the Downtown Plan and each Alternative. Not all new buildings are visible in the skyline views since some would be screened by intervening buildings. Standard techniques of perspective drawing were used to project the prototype buildings onto the skyline photos. These new buildings are represented by a half-tone pattern.

APPENDIX N: METHODS OF ESTIMATING ENERGY CONSUMPTION RELATED TO C-3 DISTRICT DEVELOPMENT

ENERGY CONSUMPTION IN C-3 DISTRICT BUILDINGS

1984 Projections

Building energy estimates for 1984 are based on development forecasts provided on p. IV.B.16, Section IV.B, Land Use and Real Estate Development. Electricity and natural gas consumption in the downtown in 1984 could not be derived solely by abstracting the energy analyses contained in EIRs prepared for the projects representing the 1981-1984 increment of growth because EIR data were available for only about 60% of these projects./1/ Electricity and natural gas consumption figures from EIR data for these projects were totaled and used to calculate mean annual budgets of about 15 kWh/sq. ft. of electricity and about 20 cu. ft./sq. ft. of natural gas. These mean values could then be applied to the total estimated floor area of development between 1981 and 1984, and the resulting total electricity and natural gas consumption estimate could be added to the existing, 1981 development estimates to yield estimates for 1984.

EIR energy estimates in San Francisco are based in part on assumptions provided by the California Energy Commission for use in calculating performance energy budgets for Title 24 compliance. Assumptions for performance energy budgets include electrical receptacle loads that do not account for use of computers, copiers, and other large electrical appliances.

Estimates of existing consumption in the downtown were not available from PG&E./2/ Instead, per-sq.-ft. electricity and natural gas consumption factors reported in Recommendations for Reducing Community Energy Costs (Citizen's Energy Policy Advisory Commission, 1982) were used in combination with unpublished building energy consumption data supplied by the City, as shown in Table N.1, to select the factors used as a basis for the 1981 electricity and natural gas values for commercial uses included in the totals in Table N.2./3/

Residential energy consumption in 1984, which is included in the totals in Table N.2, was calculated using 3,800 kWh/year per unit for electricity and 87,000 cu.ft./year per unit for natural gas, based on 1979 data contained in Energy Supply and Consumption Patterns: Trends and Prospects, 1975-1985 (City and County of San Francisco, 1980).

TABLE N.1: ENERGY CONSUMPTION FACTORS FOR DOWNTOWN COMMERCIAL SPACE IN 1981

	Energy Consumption Factor					
	Electricity (kWh/sq. ft.-yr.) (a)			Natural Gas (cu. ft./sq. ft.-yr.) (b)		
	Reported Factor		Factor Used	Reported Factor		Factor Used
Use	(c)	(d)		(c)	(d)	
Office	20-27	18	27 (e)	16-33	--	33 (e)
Retail	--	20	20	--	82	82
Hotel	17	20	20 (e)	88	91	91 (e)
Other	--	29-55	29 (f)	--	82-680	82 (f)

(a) One kWh is equal to 10,239 Btu at source.
(b) One cu. ft. of natural gas is equal to 1,100 Btu at source.
(c) From unpublished building energy consumption data supplied by David Rubin, Department of City Planning, January, 1984.
(d) From Recommendations for Reducing Community Energy Costs, Citizen's Energy Policy Advisory Commission, 1982.
(e) Upper end of range selected for worst-case analysis.
(f) Lower value selected because it is more representative of mix of uses in Downtown Plan than upper value.

SOURCE: Environmental Science Associates, Inc.

TABLE N.2: ENERGY CONSUMPTION IN DOWNTOWN BUILDINGS, 1984

Component	Floor Area (million sq. ft.)(a)	Electricity Consumption (million kWh/yr.)(b)	Natural Gas Consumption (million cu. ft./yr.)(c)
1981 existing	90.0	2,200	4,900
1981-1984	7.3	130	150 (e)
1984 Total	97.3	2,300 (d)	5,050 (d)

(a) Does not include parking.
(b) One kWh is equal to 10,239 Btu at source.
(c) One cu. ft. of natural gas is equal to 1,100 Btu at source.
(d) Numbers may not add due to rounding.
(e) Based upon 7.175 million sq. ft. of office space and 123 residential units.

SOURCE: Environmental Science Associates, Inc.

Review of unpublished building energy consumption data indicates that for 19 office buildings occupied since Title 24 has been in effect, the annual electrical usage averages about 19 kWh/sq. ft./year. For buildings occupied within the past three years, the annual electrical usage averages about 18 kWh/sq. ft./year./3/ This information was not available during preparation of these EIRs. The drop in energy usage of new structures is due in part to increased understanding of Title 24 requirements and better compliance to the standards.

The discrepency between projected and actual electrical usage is due in part to occupant load factors not included within Title 24 standards. To ensure that the analysis presented in this report more closely approximates the actual potential energy impacts of downtown development, the electricity consumption factor used for the 1981-1984 development increment given in Table N.2 was increased by 3 kWh/sq. ft.-yr. for a total of 18 kWh/sq. ft.-yr.

1990 Projections

Building energy consumption for 1990 was estimated in a similar fashion to that for 1984. Energy data from EIRs representing about 60% of the projects included in the development forecast for 1984-1990 were totaled and mean values for electricity consumption (14 kWh/sq. ft.-yr.) and natural gas consumption (16 cu. ft./sq. ft.-yr.) were derived. The electricity consumption factor was adjusted by 4 kWh/sq. ft. for a total of 18 kWh/sq. ft./year to account for maximum potential energy impacts. It was assumed that proposed buildings would be at least as efficient as buildings constructed within the last three years. The electricity and natural gas factors were then applied to total sq. ft. of new commercial development to obtain the commercial electricity and natural gas requirement for the 1984-1990 development increment./1/

Residential energy consumption was again assumed to be about 3,800 kWh/year per unit for electricity and 87,000 cu.ft./year per unit for natural gas. Average unit size for all residential occupancies was assumed to be about 800 sq. ft./4/ The same energy consumption factors as for 1984 projections were used to simplify the overall analysis. Long-range trends in residential energy consumption are unclear and, because residential space is less than 10% of total new development by 1990, any incremental increase or decrease in residential energy efficiency would not be expected to change the total values, rounded to two significant digits.

The totals representing the commercial and residential 1984-1990 development increment were then added to the 1984 figures to obtain total electricity and natural gas consumption in 1990 (see Table N.3).

2000 Projections (Downtown Plan)/5/

The increment of development between 1990 and 2000 would consist of projects not now proposed or in formal review, so no EIR data are available from which to derive estimates of energy consumption. However, the current Title 24 performance standards contain energy budgets for office, retail, and other commercial uses that are achievable with current technology./6/ These have been assumed to represent maximum energy budgets for commercial buildings excluding offices built after 1990. Title 24 revisions proposed in 1983 would reduce the energy consumption of office uses, primarily through reductions in electrical loads, so the proposed revised standard for offices has been used to estimate energy budgets for buildings built after 1990./7/ The electric budgets have been adjusted upward by 5 kWh/sq. ft.-yr. to account for maximum potential energy impacts.

The Title 24 performance energy budgets are given in total, at-source Btu, however, and the relative contributions of electricity and natural gas use to these total budgets are not specified in the Title 24 regulations. To obtain estimates of electricity and natural gas consumption from the total energy budget, a ratio of electricity use to natural gas use for existing buildings was used (see Table N.4)./8/ The electricity/natural gas ratio for offices was increased from its current value of about 85/15 to 90/10 to reflect a trend toward increased electricity use and decreased natural gas use in highrise offices./8/

Projections of electricity and natural gas consumption for commercial and residential uses in 2000 are shown in Table N.5.

Residential energy consumption was again assumed to be about 3,800 kWh/year and 87,000 cu.ft./year. Average unit size for all residential units newly occupied in the 1990s was assumed to be about 900 sq. ft., an increase of 100 sq. ft. per unit from the 1984-1990 average./4/

TABLE N.3: ENERGY CONSUMPTION IN DOWNTOWN BUILDINGS, 1990

Component	Floor Area (million sq. ft.)(a)	Electricity Consumption (million kWh/yr.)(b)	Natural Gas Consumption (million cu. ft./yr.) (c)
1984	97.3	2,300	5,050
1984-1990	12.1	220	294 (e)
1990 Total	109.4	2,500 (d)	5,350 (d)

(a) Does not include parking.
(b) One kWh is equal to 10,239 Btu at source.
(c) One cu. ft. of natural gas is equal to 1,100 Btu at source.
(d) Numbers may not add due to rounding.
(e) Based upon 10.995 million sq. ft. of office space and 1,353 residential units.

SOURCE: Environmental Science Associates, Inc.

TABLE N.4: ENERGY CONSUMPTION FACTORS FOR COMMERCIAL SPACE IN 2000

Use	Title 24 Budget (Btu/sq. ft.)	Ratio of Electricity to Natural Gas (%)	Non-Title 24 Occupant Load (kWh/sq. ft.)	Energy Consumption Factor	
				Electricity (kWh/sq. ft.)(a)	Natural Gas (cu. ft./sq. ft.)(b)
Office	126,000	90/10	5	16	11
Retail	200,000	70/30	5	19	55
Hotel	141,000	50/50	5	12	64
Other	141,000	70/30	5	15	38

(a) At one kWh per 10,239 Btu at source.
(b) At one cubic foot of natural gas per 1,100 Btu at source.

SOURCE: Environmental Science Associates, Inc.

TABLE N.5: ENERGY CONSUMPTION IN DOWNTOWN BUILDINGS, 2000

Component	Floor Area (million sq. ft.)(a)	Electricity Consumption (million kWh/yr.)(b)	Natural Gas Consumption (million cu. ft./yr.)(c)
1990	109.4	2,500	5,350
1990-2000	9.8	150-170 (d)	230
2000 Total	119.2	2,700 (e)	5,600 (e)

(a) Does not include parking.
(b) One kWh is equal to 10,239 Btu at source.
(c) One cu. ft. of natural gas is equal to 1,100 Btu at source.
(d) Lower value based on proposed Title 24 performance standard; upper value based on current Title 24 performance standard.
(e) Numbers may not add due to rounding.

SOURCE: Environmental Science Associates, Inc.

ENERGY CONSUMPTION IN TRANSPORTATION RELATED TO THE C-3 DISTRICT/5/

Energy estimates for transportation related to downtown development are based on overall trip generation estimates (which are, in turn, based upon employee trip generation factors) presented in Section IV.B, Transportation. For each year (1984, 1990, 2000), the estimated daily trips of all travelers between the downtown and each of seven geographic areas via five modes of travel included in the analysis are multiplied by the mean trip length for each geographic area to obtain total passenger-miles per day for each travel mode./9/ These passenger-mile forecasts are totaled and multiplied by 295 days per year to obtain total passenger-miles per year./10/ Then the passenger-mile forecasts are multiplied by the appropriate modal energy factor to obtain total energy demand (see Table N.6).

TABLE N.6: TRANSPORTATION ENERGY CONSUMPTION RELATED TO DOWNTOWN DEVELOPMENT, 1984, 1990, AND 2000 UNDER THE DOWNTOWN PLAN

Year	Travel Mode (a)	Passenger-Miles/Year (millions) (b)	Energy Consumption Factor (per mile)	Electricity (million kWh/yr)	Gasoline (million gallons/yr.)	Diesel Fuel (million gallons/yr.)	Total Energy (trillion Btu/yr.)
1984	Auto/Taxi/Jitney/Motorcycle	860 (c)	0.048 gallons (d)		41		5.8
	BART	770	0.25 kWh (e)	190			1.9
	Muni Electric	220 (f)	0.13 kWh (g)	29			0.3
	Regional Bus Systems	770	0.007 gallons (h)			5.5	0.9
	SPRR	68	0.019 gallons (i)			1.3	0.2
	TOTAL (j)	3,100	2,900 Btu	220	41	6.8	9.1
1990	Auto/Taxi/Jitney/Motorcycle	990 (c)	0.038 gallons (d)		38		5.3
	BART	920	0.25 kWh (e)	230			2.3
	Muni Electric	330 (f)	0.13 kWh (g)	43			0.5
	Regional Bus Systems	810	0.007 gallons (h)			5.7	0.9
	SPRR	78	0.019 gallons (i)			1.5	0.2
	TOTAL (j)	3,600	2,600 Btu	270	38	7.2	9.2
2000	Auto/Taxi/Jitney/Motorcycle	1,100 (c)	0.036 gallons (d)		40		5.5
	BART	1,100	0.25 kWh (e)	280			2.8
	Muni Electric	320 (f)	0.13 kWh (g)	42			0.4
	Regional Bus Systems	940	0.007 gallons (h)			6.6	1.1
	SPRR	90	0.019 gallons (i)			1.7	0.3
	TOTAL (j)	4,100	2,500 Btu	320	40	8.3	10.1

(a) Does not include ferry trips, bicycle trips, or walking trips.

(b) Passenger miles were estimated using mean trip lengths (in miles) by geographic area of: northeast = 1.4; northwest = 3.5; southwest = 5.2; southeast = 3.8; peninsula = 12.2; east bay = 22.1; and north bay = 27.5.

(c) Vehicle-miles, rather than passenger-miles, is given in the table for gasoline-powered vehicles to facilitate use of average fleet mileage factors estimated by the California Department of Transportation. Vehicle-miles were estimated from passenger-miles assuming one passenger-trip per vehicle-trip for autos, one passenger-trip per vehicle-trip for motorcycles, 1.6 passenger-trips per vehicle-trip for taxis, and ten passenger-trips per vehicle-trip for jitneys. Passenger-miles for gasoline-powered vehicles are: 1984 = 1.2 billion; 1990 = 1.4 billion; 2000 = 1.6 billion.

(d) Gallons per mile is the inverse of the miles per gallon estimates developed by the California Department of Transportation.

(e) John Stamus, Planning and Analysis Division, Bay Area Rapid Transit (BART); personal communication, January 3, 1984.

(f) Based on the distribution of motor-coach and trolley-coach trips generated by the transportation analysis (see Section IV. , Transportation), which indicates that 57% of 1984 Muni trips and 79% of 1990 and 2000 Muni trips for downtown-related travel will be via electrified lines, and San Francisco Municipal Railway 5-Year Plan (City and County of San Francisco, 1980), which indicates the routes that Muni anticipates converting to electricity before 1990.

(g) Based on operating data reported in San Francisco Municipal Railway 5-Year Plan (City and County of San Francisco, 1980) and Muni electricity consumption data reported in Energy Supply and Consumption Patterns: Trends and Prospects, 1975-1985 (City and County of San Francisco, 1980).

(h) Based on energy factors reported in Energy Tommorrow: Challenges and Opportunities for California, 1981 Biennial Report (California Energy Commission, 1981) and average loadings for each bus system.

(i) California Energy Commission, 1981, Energy Tommorrow: Challenges and Opportunities for California, 1981 Biennial Report.

(j) Numbers may not add to totals due to rounding to two significant digits.

SOURCE: Environmental Science Associates, Inc.

NOTES - Appendix N

/1/ All EIRs from which information for this analysis was obtained are available for public review at the Department of City Planning, 450 McAllister St., 5th floor.

/2/ Gerald Tyson, Marketing Supervisor, Pacific Gas and Electric Company, letter, November 7, 1983.

/3/ Unpublished building energy consumption data supplied by David Rubin, Department of City Planning, personal communication, January, 1984. A computer printout, which contains this information, became available in January, 1984.

/4/ Based on housing data provided on pp. IV.B.2, IV.B.24, and IV.B.50, Section IV.B, Land Use and Real Estate Development.

/5/ The analysis presented is for the Downtown Plan case in the year 2000. The projections for the energy impacts of the Alternatives were developed using the same assumptions and methods used in projecting energy consumption for the project. Calculations for the Alternative cases are available for public review at the Department of City Planning, 450 McAllister Street, Fifth Floor.

/6/ California Administrative Code Title 24, Energy Conservation Standards For New Residential and Non-Residential Buildings.

/7/ California Energy Commission, May 24, 1983, "Staff Proposal for Nonresidential Buildings Standards," Nonresidential Buildings Standards Development Program, Docket No. 81-Con-1.

/8/ City and County of San Francisco, 1980, Energy Supply and Consumption Patterns: Trends and Prospects, 1975-1985.

/9/ Mean trip length for each of the seven geographic areas included in this analysis are as follows:

Geographic Area	Mean Trip Length (miles)
San Francisco	
Northeast	1.4
Northwest	3.5
Southwest	5.2
Southeast	3.8
Peninsula	12.2
East Bay	22.1
North Bay	27.5

/10/ Based on 252 business days, 105 weekend days, and eight legal holidays (New Years Day, Martin Luther King Day, Presidents Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving, Christmas) per year (252+105+8=365). Travel on Saturdays and holidays was assumed to be 50% of weekday work and non-work travel and travel on Sundays was assumed to be 25% of weekday travel. Thus:

Component	Days		Weight		Workday Equivalents
Business days	252	x	1.00	=	252.00
Saturdays	52	x	0.50	=	26.00
Sundays	53	x	0.25	=	13.25
Holidays	8	x	0.50	=	4.00
Total	365				295.25

APPENDIX O: CALCULATIONS OF AIR POLLUTANT EMISSIONS AND CARBON MONOXIDE CONCENTRATIONS

Tables O.1-O.5 show the calculations of estimated and projected downtown-related pollutant emissions. Tables O.1 and O.2 show the calculation of traffic emissions; Table O.3, the calculation of natural gas combustion emissions; Table O.4, the sums of the traffic and natural gas emissions; and Table O.5, the traffic and natural gas combustion emission factors used in the calculations.

Worksheets showing the calculations of estimated and projected worst-case curbside carbon monoxide concentrations at selected intersections, and a full description of the methodology for the calculations (Modified Linear Rollback, as described in ABAG Air Quality Technical Memo 43, January 1983), are on file and available for public review at the Department of City Planning, 450 McAllister Street, fifth floor.

TABLE O.1: CALCULATIONS OF TOTAL POLLUTANT EMISSIONS FROM DOWNTOWN-RELATED VEHICULAR TRAVEL, 1984, 1990, AND 2000 (a)

Geog. Area	Vehicle Trips/Day		Average Trip Length (mi.)	VMT (b)	Emissions (tons per day) (c)				
					CO	HC	NOx	SOx	TSP
1984:									
NE S.F.	19,125	x	1.4						
NW S.F.	20,576	x	3.5	290,719	11.86	0.95	0.68	0.07	0.75
SW S.F.	25,985	x	5.2	@ 15mph					
SE S.F.	14,949	x	3.8						
Penin.	39,797	x	12.2						
E. Bay	64,486	x	22.1	2,728,349	54.54	4.36	7.31	0.63	7.04
N. Bay	29,734	x	27.5	@ 35mph					
	214,652			@ Idle (6min)	4.20	0.40	0.10	-	-
Totals					70.60	5.71	8.09	0.70	7.79
1990:									
NE S.F.	21,571	x	1.4						
NW S.F.	22,091	x	3.5	318,487	9.01	0.78	0.49	0.07	0.82
SW S.F.	28,544	x	5.2	@ 15mph					
SE S.F.	16,458	x	3.8						
Penin.	45,519	x	12.2						
E. Bay	73,892	x	22.1	3,130,963	44.05	3.66	5.56	0.73	8.04
N. Bay	34,277	x	27.5	@ 35mph					
	242,352			@ Idle (6min)	2.98	0.29	0.07	-	-
Totals					56.04	4.73	6.12	0.80	8.86
2000 Downtown Plan:									
NE S.F.	24,484	x	1.4						
NW S.F.	23,526	x	3.5	347,834	8.15	0.80	0.45	0.08	0.88
SW S.F.	30,832	x	5.2	@ 15mph					
SE S.F.	18,655	x	3.8						
Penin.	52,205	x	12.2						
E. Bay	84,849	x	22.1	3,601,751	42.29	3.93	5.40	0.83	9.13
N. Bay	39,625	x	27.5	@ 35mph					
	274,176			@ Idle (6min)	3.05	0.31	0.06	-	-
Totals					53.49	5.04	5.91	0.91	10.01

(Continued)

TABLE O.1: CALCULATIONS OF TOTAL POLLUTANT EMISSIONS FROM DOWNTOWN-RELATED VEHICULAR TRAVEL, 1984, 1990, AND 2000 (a) (Continued)

Geog. Area	Vehicle Trips/Day		Average Trip Length (mi.)	VMT (b)	Emissions (tons per day) (c)				
					CO	HC	NOx	SOx	TSP
2000 Alternative 1:									
NE S.F.	25,491	x	1.4						
NW S.F.	24,223	x	3.5	357,852	8.38	0.82	0.46	0.08	0.91
SW S.F.	31,566	x	5.2	@ 15mph					
SE S.F.	19,274	x	3.8						
Penin.	54,814	x	12.2						
E. Bay	89,001	x	22.1	3,781,743	44.40	4.13	5.67	0.88	9.59
N. Bay	41,676	x	27.5	@ 35mph					
	286,045			@ Idle (6min)	3.18	0.32	0.07	-	-
Totals					55.96	5.27	6.20	0.96	10.50
2000 Alternative 4:									
NE S.F.	24,591	x	1.4						
NW S.F.	23,546	x	3.5	345,674	8.10	0.79	0.44	0.08	0.88
SW S.F.	30,503	x	5.2	@ 15mph					
SE S.F.	18,479	x	3.8						
Penin.	51,417	x	12.2						
E. Bay	84,125	x	22.1	3,565,990	41.87	3.89	5.35	0.83	9.04
N. Bay	39,256	x	27.5	@ 35mph					
	271,917			@ Idle (6min)	3.02	0.31	0.06	-	-
Totals					52.99	4.99	5.85	0.91	9.92
2000 Alternative 5:									
NE S.F.	24,476	x	1.4						
NW S.F.	23,612	x	3.5	347,693	8.15	0.80	0.45	0.08	0.88
SW S.F.	30,720	x	5.2	@ 15mph					
SE S.F.	18,695	x	3.8						
Penin.	51,663	x	12.2						
E. Bay	84,374	x	22.1	3,576,419	41.99	3.90	5.36	0.83	9.07
N. Bay	39,326	x	27.5	@ 35mph					
	272,866			@ Idle (6min)	3.03	0.31	0.06	-	-
Totals					53.17	5.01	5.87	0.91	9.95

(Continued)

TABLE O.1: CALCULATIONS OF TOTAL POLLUTANT EMISSIONS FROM DOWNTOWN-RELATED VEHICULAR TRAVEL, 1984, 1990, AND 2000 (a) (Continued)

(a) Emissions are from accumulative total regional traffic vehicle-miles-travelled associated with C-3 District for each year analyzed.
(b) VMT = vehicle miles travelled.
(c) Emission rates for vehicles at speed and at idle are shown in Table 0.5. Three minutes of idle per trip-end (six minutes per trip) was assumed per BAAQMD, 1975, Guidelines for Air Quality Impact Analysis of Projects.

SOURCE: Environmental Science Associates, Inc.

TABLE O.2: CALCULATIONS OF INCREMENTAL POLLUTANT EMISSIONS FROM DOWNTOWN-RELATED VEHICULAR TRAVEL, 1984, 1990, AND 2000

Geog. Area	Vehicle Trips/Day		Average Trip Length (mi.)	VMT (a)	Emissions (tons per day) (b)				
					CO	HC	NOx	SOx	TSP
1990 (since 1984) (c):									
NE S.F.	2,446	x	1.4	27,768 @ 15mph	0.79	0.07	0.04	0.01	0.07
NW S.F.	1,515	x	3.5						
SW S.F.	2,559	x	5.2						
SE S.F.	1,509	x	3.8						
Penin.	5,722	x	12.2	402,614 @ 35mph	5.66	0.47	0.72	0.09	1.03
E. Bay	9,406	x	22.1						
N. Bay	4,543	x	27.5						
	27,700			@ Idle (6min)	0.34	0.03	0.01	-	-
Totals					6.79	0.57	0.77	0.10	1.10
2000 Downtown Plan (since 1990) (d):									
NE S.F.	2,913	x	1.4	29,347 @ 15mph	0.69	0.07	0.04	0.01	0.07
NW S.F.	1,435	x	3.5						
SW S.F.	2,288	x	5.2						
SE S.F.	2,197	x	3.8						
Penin.	6,686	x	12.2	470,789 @ 35mph	5.53	0.51	0.71	0.11	1.19
E. Bay	10,957	x	22.1						
N. Bay	5,348	x	27.5						
	31,824			@ Idle (6min)	0.35	0.04	0.01	-	-
Totals					6.57	0.62	0.76	0.12	1.26

Geog. Area	Vehicle Trips/Day		Average Trip Length (mi.)	VMT (a)	Emissions (tons per day) (b)				
					CO	HC	NOx	SOx	TSP
2000 Alternative 1 (since 1990) (d):									
NE S.F.	3,920	x	1.4	39,365 @ 15mph	0.92	0.09	0.05	0.01	0.10
NW S.F.	2,132	x	3.5						
SW S.F.	3,022	x	5.2						
SE S.F.	2,816	x	3.8						
Penin.	9,295	x	12.2	650,780 @ 35mph	7.64	0.71	0.98	0.15	1.65
E. Bay	15,109	x	22.1						
N. Bay	7,399	x	27.5						
	43,693			@ Idle (6min)	0.49	0.05	0.01	-	-
Totals					9.05	0.85	1.04	0.16	1.75

(Continued)

TABLE O.2: CALCULATIONS OF INCREMENTAL POLLUTANT EMISSIONS FROM DOWNTOWN-RELATED VEHICULAR TRAVEL, 1984, 1990, AND 2000 (Continued)

Geog. Area	Vehicle Trips/Day		Average Trip Length (mi.)	VMT (a)	Emissions (tons per day) (b) CO	HC	NOx	SOx	TSP
2000 Alternative 4 (since 1990) (d):									
NE S.F.	3,020	x	1.4						
NW S.F.	1,455	x	3.5	27,187	0.64	0.06	0.04	0.01	0.07
SW S.F.	1,959	x	5.2	@ 15mph					
SE S.F.	2,021	x	3.8						
Penin.	5,898	x	12.2						
E. Bay	10,233	x	22.1	435,027	5.11	0.48	0.65	0.10	1.10
N. Bay	4,979	x	27.5	@ 35mph					
	29,565			@ Idle (6min)	0.33	0.03	0.01	-	-
Totals					6.08	0.57	0.70	0.11	1.17
2000 Alternative 5 (since 1990) (d):									
NE S.F.	2,905	x	1.4						
NW S.F.	1,521	x	3.5	29,206	0.68	0.07	0.04	0.01	0.07
SW S.F.	2,176	x	5.2	@ 15mph					
SE S.F.	2,237	x	3.8						
Penin.	6,144	x	12.2						
E. Bay	10,482	x	22.1	445,457	5.23	0.49	0.67	0.10	1.13
N. Bay	5,049	x	27.5	@ 35mph					
	30,514			@ Idle (6min)	0.34	0.03	0.01	-	-
Totals					6.25	0.59	0.72	0.11	1.20

(a) VMT = vehicle miles travelled.
(b) Emission rates for vehicles at speed and at idle are shown in Table 0.5.
(c) Emissions are from incremental regional traffic vehicle-miles-travelled associated with new C-3 District development added between 1984 and 1990.
(d) Emissions are from incremental regional traffic vehicle-miles-travelled associated with new C-3 District development added between 1990 and 2000.

SOURCE: Environmental Science Associates, Inc.

TABLE O.3: CALCULATIONS OF TOTAL AND INCREMENTAL POLLUTANT EMISSIONS FROM DOWNTOWN-RELATED BUILDING NATURAL GAS COMBUSTION, 1984, 1990, AND 2000

Natural Gas Combustion	Emissions (tons per day) (a) CO	HC	NOx	SOx	TSP
1984:					
17 x 10^6 ft^3 (b)	0.17	0.07	1.02	0.01	0.09
1990:					
+ 0.64 x 10^6 ft^3 (c)	0.01	0	0.04	0	0
=18 x 10^6 ft^3 (b)	0.18	0.07	1.08	0.01	0.09
2000 Downtown Plan:					
+ 1.0 x 10^6 ft^3 (d)	0.01	0	0.06	0	0.01
=19 x 10^6 ft^3 (b)	0.19	0.08	1.14	0.01	0.10
2000 Alternative 1:					
+ 1.9 x 10^6 ft^3 (d)	0.02	0.01	0.11	0	0.01
=20 x 10^6 ft^3 (b)	0.20	0.08	1.20	0.01	0.10
2000 Alternative 4:					
+ 1.0 x 10^6 ft^3 (d)	0.01	0	0.06	0	0.01
=19 x 10^6 ft^3 (b)	0.19	0.08	1.14	0.01	0.10
2000 Alternative 5:					
+ 0.92 x 10^6 ft^3 (d)	0.01	0	0.06	0	0
=19 x 10^6 ft^3 (b)	0.19	0.08	1.14	0.01	0.10

(a) Emission rates for building natural gas combustion are shown in Table 0.5.

(b) Emissions are from accumulative total building natural gas combustion associated with C-3 District for each year analyzed.

(c) Emissions are from incremental building natural gas combustion associated with new C-3 District development added between 1984 and 1990.

(d) Emissions are from incremental building natural gas combustion associated with new C-3 District development added between 1990 and 2000.

SOURCE: Environmental Science Associates, Inc.

TABLE O.4: SUMS OF CALCULATED TOTAL AND INCREMENTAL POLLUTANT EMISSIONS FROM DOWNTOWN-RELATED VEHICULAR TRAVEL AND BUILDING NATURAL GAS COMBUSTION, 1984, 1990, AND 2000

	Emissions (tons per day)				
1984:	CO	HC	NOx	SOx	TSP
Total (a)	70.77	5.78	9.11	0.71	7.88
1990:					
Increment (b)	6.80	0.57	0.81	0.10	1.10
Total (a)	56.22	4.80	7.20	0.81	8.95
2000 Downtown Plan:					
Increment (c)	6.58	0.62	0.82	0.12	1.27
Total (a)	53.68	5.12	7.05	0.92	10.11
2000 Alternative 1:					
Increment (c)	9.07	0.86	1.15	0.16	1.76
Total (a)	56.16	5.35	7.40	0.97	10.60
2000 Alternative 4:					
Increment (c)	6.09	0.57	0.76	0.11	1.18
Total (a)	53.18	5.07	6.99	0.92	10.02
2000 Alternative 5:					
Increment (c)	6.26	0.59	0.78	0.11	1.20
Total (a)	53.36	5.09	7.01	0.92	10.05

(a) Emissions are from accumulative total regional traffic vehicle-miles-travelled and building natural gas combustion associated with C-3 District for each year analyzed.
(b) Emissions are from incremental regional traffic vehicle-miles-travelled and building natural gas combustion associated with new C-3 District development added between 1984 and 1990.
(c) Emissions are from incremental regional traffic vehicle-miles-travelled and building natural gas combustion associated with new C-3 District development added between 1990 and 2000.

SOURCE: Environmental Science Associates, Inc.

TABLE O.5: EMISSION RATES FOR VEHICULAR TRAVEL AND FOR BUILDING NATURAL GAS COMBUSTION, 1984, 1990, AND 2000

AVERAGE MOTOR VEHICLE EMISSION FACTORS (a) (Used in Tables O.1 and O.2)

	CO	HC	NOx	SOx	TSP
1981:					
5 mph	126.65				
10 mph	66.84				
15 mph	46.82				
20 mph	37.23				
35 mph	22.65				
Idle	4.58				
1984:					
5 mph	97.62				
10 mph	52.19				
15 mph	37.00	2.95	2.11	0.21	2.34
20 mph	29.66				
35 mph	18.13	1.45	2.43	0.21	2.34
Idle	2.96	0.28	0.067		
1990:					
5 mph	66.37				
10 mph	35.75				
15 mph	25.65	2.23	1.39	0.21	2.33
20 mph	20.76				
35 mph	12.76	1.06	1.61	0.21	2.33
Idle	1.86	0.18	0.042		
2000:					
5 mph	54.91				
10 mph	29.51				
15 mph	21.25	2.08	1.16	0.21	2.30
20 mph	17.28				
35 mph	10.65	0.99	1.36	0.21	2.30
Idle	1.68	0.17	0.035		

BUILDING NATURAL GAS COMBUSTION EMISSION FACTORS (b) (Used in Table O.3)

CO	20
HC	8
NOx	120
SOx	0.6
TSP	10

(a) BAAQMD EMFAC6C vehicular emission factors at speed are in grams per mile; idle factors are in grams per minute. Multiply grams by 1.1025×10^{-6} to equal tons.

(b) US EPA AP-42 natural gas combustion emission factors are in pounds per million cubic feet. Multiply pounds by 5×10^{-4} to equal tons.

SOURCE: Bay Area Air Quality Management District; U.S. Environmental Protection Agency.

APPENDIX P: ACCOUNTS OF EXPERIENCE WITH TWO LARGE EARTHQUAKES/1/

California has extensive experience with earthquake effects, including eyewitness accounts and reports based on direct observation. Reviewing some of this past experience can give a feel for "what it is like to be there," and may help prepare people on what to expect in the future. The following accounts, for example, are based on experience with two large earthquakes, the 7+ earthquake on the Hayward fault in 1868, and the 8.3 earthquake on the San Andreas fault in 1906:

- 1868, near San Leandro: I managed to get out of the building . . . . when the shaking started. The house was thrown from its foundation, the chimney was torn from the roof, and the porch was wrenched away, dishes were broken and everything was in confusion. I found that most of the houses were in the same condition as my own—thrown from their foundations, with chimneys down, porches knocked sideways, etc. All the while the ground was shaking and continued to shake for days, even weeks./2/

- 1868, near Irvington: I was then about 15 years of age and my home was near Irvington. When the shock came I was alone in the house with my baby brother and my mother called to me to get the baby. I managed to get the child over my arm, face down with a pillow on top, then falling and crawling I worked my way to the kitchen door. My mother was on the ground, and every time she tried to get up she was thrown again. As I sat there I could see the ground in waves like the ocean. After the main shock I think we had a hundred shocks during the first 24 hours, not a house was left with chimney on it./3/

- 1906, San Francisco: To some extent the earthquake caused damage to buildings and other structures in all parts of the city and county of San Francisco . . . . Almost everywhere chimneys were thrown down or badly broken, but in a few small localities most of the chimneys withstood the shock . . . . Plaster on walls and ceilings was very generally damaged. So, probably, were frail partition walls and chandeliers, crockery and fragile household furnishings. Such effects were typical of large sections of the city. There were relatively small districts, however, in which brick and frame buildings of ordinary construction were badly wrecked or quite destroyed. Pavements were fissured, buckled, and arched. Sewers and watermains were broken. In places, portions of streets were moved laterally several feet out of place. Well-ballasted street-car tracks, equipped with 8, 10, or 11 inch rails, were arched and flexed or thrown into shallow wave forms . . . . Effects of this degree of violence were pretty closely confined . . . . to areas of "filled" or "made" land./4/

About the Ferry Building, at the foot of the Market Street, is a district of "made" land . . . . in which high intensity was manifested . . . . Wooden buildings, 1 story to 3 stories high, with brick or stonework fronts, were interspersed among ordinary brick buildings from 2 to 6 or 8 stories in height. Mingled with these was a considerable number of modern, class A, office buildings. Here the fire burned fiercely and caused great havoc . . . . After the fire had past, standing walls revealed ugly, sinuous cracks, in rudely parallel systems, which were not due to fire nor to dynamite. Masonry blocks in the walls of excellent modern buildings were broken as by a blow. Rivets were sheared off in parts of the framework of steel structures, and tension rods in such frames were badly stretched. Tubular cast-iron columns, supporting floor girders, were broken off near their bases in cellars where they rested upon piling. The concrete casing(s) of piles were frequently broken. Wherever the intensity was high, the tendency to crack or crush near the base, as tho a sharp blow had been struck there, (was) notably conspicuous. In spots the streets sank bodily, certainly as much as 2 feet, probably more . . . . The surface of the ground was deformed into waves and small open fissures were formed, especially close to the wharves. Buildings on the water side, along East Street, generally slumped seaward in some cases as much as 2 feet. The damage was greatest close to the water's edge . . . ./5/

In the neighborhood of the crossing of Steiner and Sutter Streets, there is an irregularly bounded district a little larger than a city block in which several buildings not conspicuously weak were totally destroyed. St. Dominic's Church, at the corner of Steiner and Bush Streets, was a complete ruin . . . . Its steeple towers were ruined, its roof fell in, and all its walls were so badly cracked that it became a menance to the neighborhood. If the shock had occurred during the hours of religious service, few would have escaped from the building alive. Probably it was not a building of the most excellent construction; but, on the other hand, it did not appear to be built flimsily. It certainly suffered a most violent shaking./6/

- 1906, Stanford University: I came suddenly awake, as if someone had given me a very strong shove. Nothing happened for a moment, and then I found myself clutching at the blankets to keep from being tossed out of my wildly shaking bed. Between the big pulses of movement, I struggled upright and into my slippers, and then groped my way to the door in the faint morning light. The building was rocking in a most violent way, and I fell more than once as I moved down the hallways. What I remember best, though, was the frightful noise—an overall dull roar, with the groaning of timbers and the cracking and falling of masonry. I made it to the end of the hall in spite of the pulsating motions, and looked out the window to see other buildings swaying like so many trees in a high wind. Then the big stone chimney of the power plant collapsed with an awful roar./7/

Such first-hand accounts give people a chance to reassess their thinking about what to do when the next great earthquake occurs. Some now make highly unrealistic assumptions that they can put through emergency calls on the telephone, or, if at work, get in their cars and go home to join their families!

In short, there is a wide gap between what many people think they are going to do, and what will actually be possible during and immediately after heavy earthquake shaking. Such unrealistic perceptions are one of the uncertainties involved in reassessing the possible consequences of the next great earthquake.

NOTES - Appendix P

/1/ Appendix P is extracted in its entirety from Public Affairs Report, Bulletin of the Institute of Intergovernmental Studies, University of California, Berkeley, Vol. 20, August 1979, No. 4., pp. 7 and 8.

/2/ [California], State Earthquake Investigation Commission, A.C. Lawson, Chairman, Report of the State Earthquake Investigation Commission: The California Earthquake of April 18, 1906 (Washington, D.C.: Carnegie Institution of Washington, 1908), Vol. I (hereinafter cited as Lawson, SEIC), pt. II, p. 442.

/3/ Lawson, SEIC, pt. II, p. 444.

/4/ Lawson, SEIC, pt. I, pp. 222, 223.

/5/ Lawson, SEIC, pt. I, p. 233.

/6/ Lawson, SEIC, pt. I, p. 231.

/7/ Richard H. Jahns, unpublished manuscript.

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